THE MINING CONGRESS JOURNAL

VOL. I

SAFETY—EFFICIENCY—CONSERVATION

No. 11

NOVEMBER, 1915

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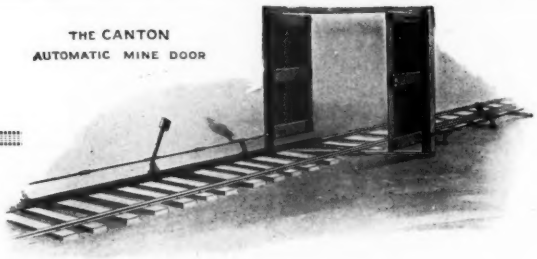

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The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

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THE AMERICAN MINING CONGRESS

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I hereby make application for Associate Membership in THE AMERICAN MINING CONGRESS, and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same. Herewith find $1.00 fee and $2.00 dues for one year, including subscription to the Mining Congress Journal ($1.00 of which is designated as subscription to Journal).

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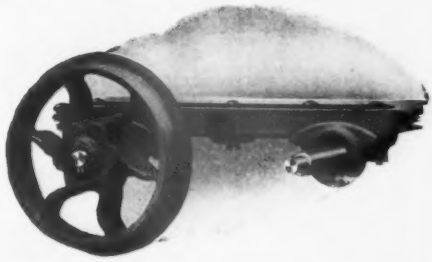

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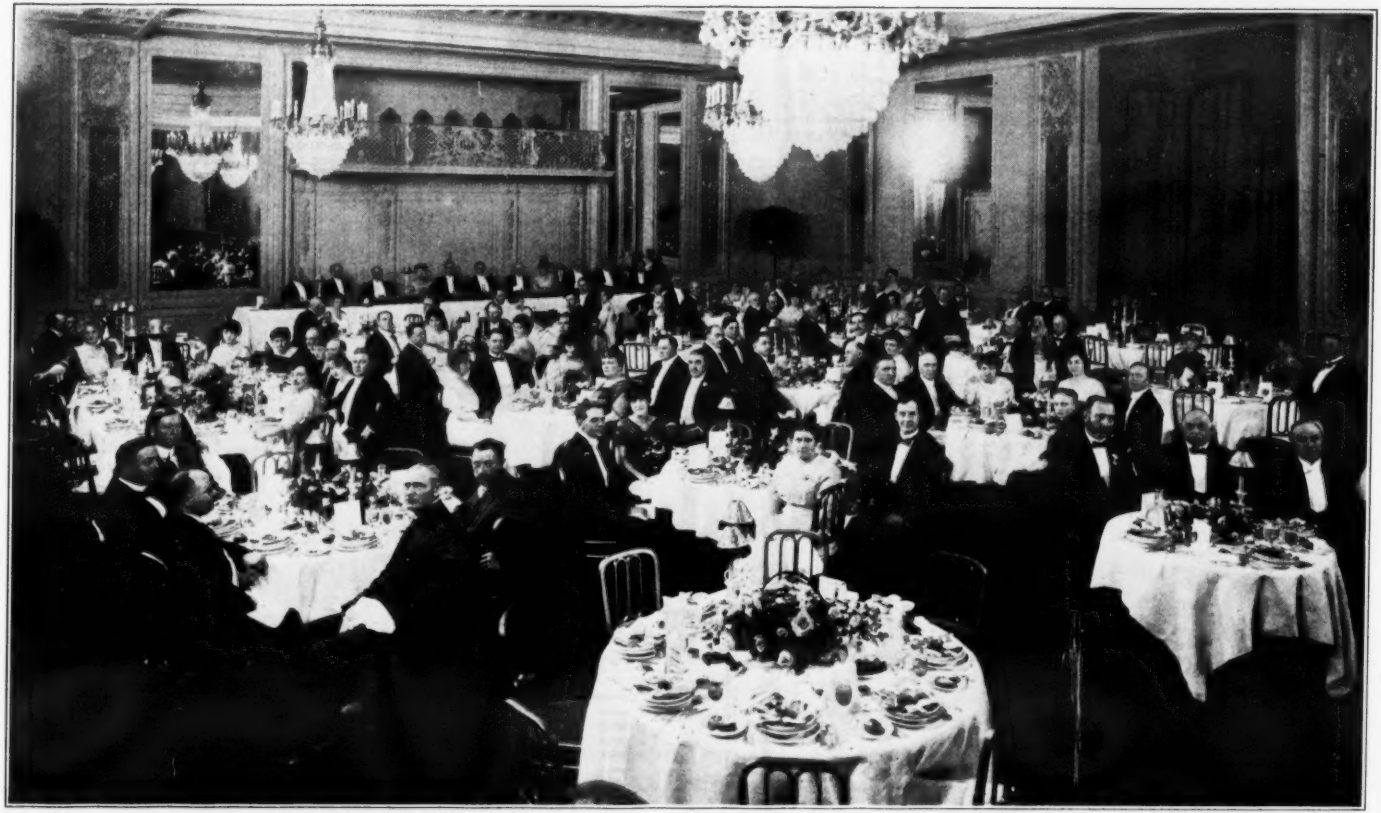


SCENE AT THE BANQUET GIVEN BY THE AMERICAN MINING CONGRESS DURING ITS ANNUAL CONVENTION AT SAN FRANCISCO

VOL. I, NO. 11 WASHINGTON NOVEMBER, 1915

THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

DIRECTOR SMITH OF GEOLOGICAL SURVEY MAKES PLEA FOR PLAIN WRITING

In Address before American Mining Congress He Tells of His Ambition to Have Reports of His Bureau in Language of the People—Says Science is Simple

Among other things in his plea for the use of popular language for the expression of scientific thought, Dr. George Otis Smith, Director of the Geological Survey, in an address before the American Mining Congress, said:

"It is our ambition that the reports of the United States Geological Survey shall be written in the language of the people.

"At its best science is simple.

"Scientific thought must be accurate and to the point.

"The reader often finds himself facing a 'no admittance' sign when he opens a scientific report.

"How common is the sad discovery that a piece of obscure writing is simply the product of roundabout reasoning and twisted thinking.

"Printer's ink is not a re-agent for clarifying muddy thoughts.

"Plain thinking must come before plain writing. There's the rub.

"The exploration, surveys and investigations of the Geological Survey are in the public interest only as results are made public."

Before a large and representative audience of the nation's mine owners and operators, Dr. George Otis Smith talked on "Plain Writing" at the recent convention of the American Mining Congress. His address in full follows:

Two years ago I spoke to the American Mining Congress on the subject Plain Talk—both preaching the use of direct statement and trying to practice what I preached. Of late my thoughts have turned more and more to the need of the use of popular language in stating technical results; hence this afternoon I venture to discuss plain writing from the standpoint of a Government scientist. For twenty odd years my association with scientists has been fairly intimate and though I may not qualify in plain writing myself, I can claim large acquaintance with both the written and the printed page whose meaning is far from plain.

SCIENCE IS SIMPLE

At its best, science is simple; for science is not much more than arranging facts so as to set forth the truth. Scientific thought is exact and direct, and scientific writing must therefore be accurate and to the point. The scientist should think directly and with the precision of one of the instruments of his trade, and above all his language must present that thought exactly.

In scientific writing this need of exact statement has led to the use of special terms, words that keep their razor-edge because used only for hair-splitting distinctions. In a certain degree this adoption of words not commonly used is unavoidable and therefore defensible. Yet, the practice is carried to an extreme and far too often the result is a highly specialized language so distantly related to our mother tongue that as a preliminary qualification the writer has to pass a civil service examination, and the reader usually finds himself 'shut out' and facing a 'no admittance' sign unless he happens to possess

the degree of doctor of philosophy in that particular branch of science.

NOT TO BE DISCARDED

Mind you, it would be folly to throw away these tools so well fitted for special purposes; yet it is no more the part of wisdom to put them to everyday uses. The task for the scientist is to decide when to use his technical terms and when to talk United States. Of course, any writer's first duty is to be intelligible. Choice of language thus resolves itself largely into an understanding of the audience. If a scientific investigator desires to announce his discovery to his fellow workers, he does well to use those exact terms that carry the same shade of meaning the world over and indeed may have the same form in several languages; if, on the other hand, his results have immediate value for the mine operator or the prospector, the geologist does not and cannot accomplish his purpose unless he writes in plain language, using words possibly less exact but surely more understandable.

It may be that I have stated the case too simply, so that this matter of plain writing may seem altogether easy, yet making out the prescription is always much easier than effecting the cure. Indeed, I suspect the difficulty is largely an internal trouble with the author, so deep seated that my simple remedy of fitting the language to the reader does not reach it.

Sir Clifford Allbutt in his "Notes on the compositon of scientific papers" lays down the plain rule: "Take pains, therefore, with yourself first, then with your reader." His idea that clear thinking must be the first step to plain writing, of course deserves our endorsement, based upon experience. How common is the sad discovery that a piece of obscure writing is simply the product of roundabout reasoning or twisted thinking. Printer's ink, in whatever amount used, unfortunately possesses no magic properties as a reagent for clarifying muddy thoughts. Yet, no doubt it sometimes happens that some of us try to cover up with long words our uncertainty in thinking. So in preaching reform in scientific publications, those of us who are doing the work must realize that plain thinking comes first. There's the rub!

BIG MEN PLAIN WRITERS

It is therefore not a coincidence that some of the deepest thinkers in geological science have also possessed a literary style conspicuous for clarity of expression. On the other hand, some authors whose English needs the most editing are equally careless in their quotation of facts determined by others and indeed in the statement of their own observations. I mention this simply to show that I am strong in my belief that plain writing is not something beneath the plane of endeavor of the scientific investigator—indeed it is something so hard to attain that the most of us need to aim high, to raise our standards of scientific thinking. The use of common words is worthy of any writer if his purpose is to transmit thought.

The discussion of plain writing at this time is not academic, because my real purpose is to take this opportunity to announce to you the policy of the United States Geological Survey on this subject. Our explorations, surveys and investigations are in the public interest only as results are made public. This policy is as old as the Geological Survey itself, but several things have given a special impetus to the development of this policy. Beginning in August a year ago a large volume of inquiries from producer and consumer of minerals came pouring into our office, and as never before the Geological Survey became a kind of "Central" to the mineral industry. This opportunity for a larger service to the public not only resulted in gratifying relations with a large number of correspondents, but the rendering of such service has proved instructive to the public servants charged with the duty. Many of us on the Survey staff have acquired a keener realization of the need not only of giving the public the facts, but also of making those facts intelligible and useful to the citizen who may lack professional training in geology or engineering.

THE GUIDE BOOKS

Another line of this larger service has been the issue of four guide books to this great Western country, in which the purpose has been to inform the traveler concerning the resources of this part of our country as well as to unfold to him in attractive form its fascinating geology. The effort to meet the public need of authoritative information of this type seemingly has met with success and other guide books in this series will follow in other years. More than that, however, the reflex influence of this innovation is already felt, and the evident appreciation by the general public of this type of popular description is encouraging the Survey writers. The educational responsibility of this Federal service is being more fully realized, and we intend to give much more attention to the simplification of the language of the professional publications and to the issue of reports that shall be popularly descriptive and instructive without loss of exactness. Even if plain language is used our reports should be no less efficient vehicles for professional discussion or for announcement of geologic discoveries.

FOR GENERAL PUBLIC

For thirty-six years the United States Geological Survey has reached an ever widening circle of readers and even in those first years of the Survey's life, Kind and Emmons and Gilbert gave to the West the results of their work in strong and forceful English. Yet with the growth of the organization and the development of the science, the tendency toward highly specialized writing has been too marked and the present plea for plain writing

has become necessary. The Government scientist has at least two obligations; first, that of making his investigations more and more exact in method and direct in result; second, that of making his product, the written report, such as to meet the needs of not only his professional associates but also the general public. It is our ambition that the reports of the United States Geological Survey shall be written in the language of the people.

RADIUM OPERATIONS OF BUREAU OF MINES TO END NEXT YEAR

Further complimentary reference has been made to the radium work being conducted in Denver by the Bureau of Mines by Dr. Charles L. Parsons, who just has returned from a trip through the West.

The largest single consignment of radium reached the Bureau of Mines the middle of last month. This shipment of radium is valued at $48,000.

Owing to the condition of the roads and the inclement weather, Dr. Parsons was unable to take his contemplated trip to the radium mine at Paradox Valley. The mining practically has been completed. A total of 940 tons of ore has been extracted.

Work has been begun on the concentrating plant, which is being provided with dryers and mechanical carriers. All low-grade ores will be concentrated. All work in connection with the mining and concentration of low-grade ores will be completed early in the spring.

Approximately four and one-half grams of radium have been extracted at the plant.

The manufacturing operations of the National Radium Institute probably will cease in October of next year. Thereafter the plant will be sold or disposed of otherwise.

GEOLOGICAL SURVEY CORRECTS AN ERRONEOUS IMPRESSION

An impression seems to have been given considerable circulation in portions of Louisiana, Texas and Oklahoma that the presence of oil may be determined by analysis of earth. In order to counteract this erroneous idea the Geological Survey has made the following statement:

"Analyses of earth throw practically no light upon the question of the existence of oil or gas. The problem of finding possible oil pools consists in the location of favorable geologic structures, which require extensive study of the country and may or may not be attended with success. Oil and gas are sometimes found at the surface in connection with the salt dome fields of the coastal plains of Louisiana and Texas, but usually not in connection with the fields of north Louisiana, north Texas and Oklahoma. Asphalt is sometimes found in the Oklahoma fields."

STATE DEPARTMENT ASKED TO PROTEST PLATINUM EMBARGO

Consumers of platinum in this country are urging the State Department to protest against the embargoes on platinum being enforced by Russia and France. As yet England has not declared a formal embargo, but evidently action has been taken which is tantamount to an embargo. At least no platinum is reaching this country from England, and it is very evident that the intention is to allow none to come. The only hope seems to lie in the possibility of a protest by this Government.

Due to the war, all the Colombian production of platinum is coming to the United States. It is estimated that the 1915 output of platinum in Colombia will be nearly double that of any previous year.

This increase is due almost entirely to the work of the new American and English companies which recently have begun operations there.

The price of platinum from February to May fluctuated between $38 and $39 per ounce. From June to September the average was not over $38 per ounce. In the second week in September, however, the price shot up rapidly. September 25 it reached $50. Since then the price has remained at $50 per ounce, and some sales have been recorded at slightly higher figures.

Consumers of this metal declare that possibility of any lower price is remote unless the arbitrary action on the part of the European countries is stopped.

LANDS IN POWDER RIVER BASIN ARE CLASSIFIED

Promising coal fields exist in the Powder River Basin of Wyoming, according to Ralph Howell, an assistant geologist of the United States Geological Survey, who has been assisting C. W. Wegemann in mapping this area.

The party consisted of six members, and began its work at Douglas, Wyo., in June. All of the work was done in the general area surrounding Douglas, Gillette and Caspar.

While the coal in this area is of good quality and exists in beds of considerable thickness, their distance from transportation facilities, and the absence of important markets means that their development is a matter of many years in the future.

The object of having a geological party in this field was to classify the lands so that homesteaders may get a clear title to those of the lands which are non-coal.

During the summer's work, Mr. Wegemann made a side trip to the Salt Creek oil fields, and recorded the development which has been done since the last report made by the Survey.

Owing to the absence of wood in this region, the ranchers are mining sufficient coal for their own use.

REVISION OF MINING LAWS TO BE URGED AT MEETING

Mining and Metallurgical Society Invites Mining Associations to Discuss Problem at Washington Convention

Various problems dealing with the revision of mineral land laws will be considered at a meeting of the Mining and Metallurgical Society of America which will be held in Washington, December 16.

Representatives from all the western associations and mining corporations have been invited to attend this meeting. The American Mining Congress has accepted an invitation to take part. It is expected that arrangements will be made whereby the well-organized legislative machinery of the Mining Congress may become even more effective with the cooperation of the Mining and Metallurgical Society.

The principal questions which will come up at the meeting will be discussion as to a reasonable term of years beyond which placer claims shall be immune from attack on the ground of fraud; full privilege of appeal in contests over location; recording of notices of mining locations so as to insure public notices; the abolishment of the law of the apex; the appointment of a government commission to investigate and make recommendations for the revision of the mining laws.

Previous to the meeting a committee will call upon the President to request that he make mention in his next message to Congress of the necessity of changes in the land laws of the United States as they affect mining locations.

GEOLOGIST SEES LITTLE PROMISE IN COAL FIELD

The inferior quality of the coal and the fact that extensive prospecting in the Orofino coal field has failed to reveal coal in commercial quantities suggest that the field will be of no importance as a producer of coal or lignite except in a very local way. It is questionable if any additional information regarding the coal or lignite possibilities of the general region of sufficient promise to justify further prospecting will be found, and Geologist Lupton, after an examination of the field, does not advise anyone to expend time and money in such work.

Installs Cabinet for Medals

A first prize blue ribbon and a gold medal were won by the Bureau of Mines exhibit at the International Soil Product's Exposition.

With the rapid accumulation of medals by the Bureau of Mines, it has become necessary to furnish a cabinet where they may be kept properly. For this reason it has been decided to install a handsome cabinet in the Bureau offices here.

NEW RADIUM CURES TESTED IN BROOKLYN

Dr. Chase Reports Successful Use in Many Cases—Corrects Anemic Condition

The Brooklyn Surgical Society heard with deep interest the report of Dr. Walter B. Chase, who described the recent uses of radium to treat suppuration and inflammation. He said after the meeting, "It is very satisfactory to see these cases recover in two or three weeks."

From the discussion it was evident that cases had been selected that offered so slim a prospect of safety in operation as to warrant any reasonable treatment the patient might bear—cases of extreme physical weakness or risk of fatal hemorrhage on the slightest movement of the tissue. No sensational statements marked the report. Discharging sinuses from bone conditions, tuberculosis sinuses, and tuberculosis inflammation of glands of the neck had responded quickly to the use of small doses of radium. Amounts of 25 milligrams were customary.

"The effect of radium is not that of a germicide," said Dr. Chase. "It is most effective in action upon the effects of staphylococci (bacteria-creating pus). Radium acts by changes upon the blood vessels, obliterating them or clogging their walls."

A Brooklyn radiologist was quoted as having said that radium acts upon the fluids of the blood, and that in these fluids subsequent changes called "anti-bodies" may be developed and be passed within the blood stream to other parts of the tissue and produce those results attributed to radium. Dr. Chase did not affirm this, or say why it might be, but he added, "It is known that the effect of the injection of radium compounds into the blood, intravenously, is followed by an increase in red blood cells. This opposes conditions of anemia." Cases of post-operative anemia were mentioned.

COAL DUST INSIDE MOTORS INCREASES EXPLOSION MENACE

Further investigation of questions with regard to explosion proof motors at the Bureau of Mines develops the fact that the presence of coal dust inside the motor increases the liability of explosion.

NEW GUIDE BOOKS REPRESENT MANY YEARS OF FIELD WORK

Press comment and a large number of letters received at the Geological Survey, indicate that the Union Pacific Guide Book, which is the first of the four to be issued, has proven very popular.

The Northern Pacific Guide Book is just out. The guide books covering the Santa Fe and the Coast route are on the press.

An idea of the amount of work represented by these books may be obtained from the fact that each ten pages of descriptive matter often represents an average of four years of field work.

ALASKA IS HAVING ONE OF MOST PROSPEROUS YEARS IN ITS HISTORY

Gold and Tin Output Will Be Greater Than Last Year—Copper Production Will Be Highest on Record—Antimony Being Shipped in Quantity—Promising Silver Property Opened

With the gold production of Alaska promising to exceed considerably the output of last year, with the copper production likely to exceed that of any other year in the history of the territory, and with exceptional prosperity in general mining and other activities, Alaska is having one of its best years, according to Alfred H. Brooks, in charge of the Division of Alaskan Mineral Resources of the United States Geological Survey, who just has returned to Washington after several months in the North.

High prices of antimony have stimulated the mining of this metal to a great extent, and large shipments have been made from the Fairbanks region. Some has been shipped from Nome, and antimony ore also is coming from the Canadian Yukon region.

Tin mining is continuing and the output promises to be larger than last year.

Mr. Brooks left Seattle July 15. He conferred with a number of the members of his geological field parties in southeastern Alaska. He reached Ketchikan July 18. He went through to Skagway and then down the Yukon. He was delayed at Dawson, but during the remainder of the trip to Iditarod made very good connections. He arrived at the town of Iditarod August 7, remaining there until August 17. He then went back up the river to the Hot Springs district, arriving there August 26. He left August 30 for Fairbanks, where he arrived the following day. He stayed there until September 17.

UNUSUAL RAINS

Mr. Brooks had to abandon his proposed trip to Valdez owing to the unusual rains, which made the wagon road impassable. Rains in this region in the fall are rare occurrences. On this account it was necessary for him to return by way of the Yukon.

At White Horse Mr. Brooks had a conference with D. D. Cairnes, the geologist in charge of Yukon territory for the Canadian Government. Considerable valuable information was exchanged. Here Mr. Brooks learned something of the new Mayo district, in which a valuable silver-lead vein has been opened.

Enough work has been done to establish the fact that a well-defined fissure exists. The ore occurs in shoots and is of high grade. It has been shipped in considerable quantities ever since the river opened this spring

It is understood that Thomas Aitken, an American, has purchased the property and is pushing the work on it.

Establishment of numerous wireless stations is proving a great boon to Alaska. The station at Iditarod is especially useful to the miners at that station. In addition to those of the War Department and Navy Department, there are various other stations in Alaska. All of the large canneries have erected stations at their plants and have equipped their fishing boats with wireless apparatus. The canneries are able to handle their business much more efficiently by the use of the wireless, as they are able to send their cargoes of fish to the point where they are most needed.

ABANDONS LAND LINES

So successful has the operation of the wireless been that the War Department is abandoning many of its land lines.

Alaska has had one of the hottest summers in its history. In addition there have been heavy rains this fall. As a result of the hot weather, the glacial streams were very high during the summer, and, following the fall rains, other streams were often at flood stage. On this account travel has been very difficult across country, and mining has been interfered with in some districts.

The automobiles have been making regular trips to Valdez and Chitna all summer and were stopped only temporarily during the heavy rains in the fall.

This automobile line, which has been in operation three years, has reached a stage of great efficiency, and has made possible a trip to Seattle in eight or nine days. This winter will be the first time auto trucks will have been operated over this route to carry mail. It is expected that they will be able to operate during the greater part of the winter.

MINING CAMPS BOOM

Mining throughout the entire territory is enjoying a period of great prosperity. With the low freight rates which have been arranged, the antimony mines are able to handle comparatively low-grade ore. While they perhaps would not be able to compete with the antimony production of the United States under ordinary circumstances, the demand for the metal is such as to make any supply readily salable at present.

On the steamer bound for Alaska in the early summer a young lady told one of the passengers that she hardly could wait to arrive at White Horse, her destination, because she was so anxious to have a ride on a sled pulled by a dog team. On her arrival at White Horse she found the temperature hovering around the ninety mark. Her idea of dog teams and sleds was lost in her desire to get into her baggage to extract a parasol and summer clothing.

Very satisfactory results were obtained by the field parties of the Geological Survey which were operating in the territory during the summer. While the swollen streams interfered with the movements of some of the parties, others were aided by the agreeable weather, with the result that the average of the work done is very satisfactory.

CANNEL COAL ATTRACTING INCREASING AMOUNT OF ATTENTION

Owing to a large number of requests which have been coming to the Geological Survey recently with respect to cannel coal, a special bulletin on this subject soon is to be published.

The work is in the hands of G. H. Ashley, who has had many years' work with this class of coal.

Cannel coal had its heyday previous to the bringing in of the Drake oil well at Titusville, Pa., in 1859. At that time it was being used as an important source of kerosene oil. Almost immedately after the bringing in of the first petroleum well its usefulness in this connection ceased.

There has been a steady but limited demand for cannel coal for use in grates and for a few special uses which require very small tonnage.

Cannel coal is full of gas and conditions are now such that it is believed it can be used profitably for distilling ammonia and gasoline.

To the requests which have been reaching the Geological Survey it has been possible to refer those making inquiries to only one article which deals comprehensively with cannel coal. This appeared in the *Mining World* in two installments, July 29 and August 7, 1905. The article was written by Dr. Ashley.

The price of American cannel coal at present varies from $12 to $15 per ton. The English production sells for $18 per ton in the East.

GEOLOGY OF UINTA MOUNTAINS TO BE DISCUSSED IN REPORT

Work is continuing on the classification of phosphate lands in northeastern Utah and northwestern Colorado, at the eastern end of the Uinta Mountains. As soon as the data collected in the summer of 1915 can be compiled a report on the geology and mineral resources of the entire region will be published. This report will not be available before next summer.

MANNING URGES COOPERATION WITHIN BUREAU OF MINES

Shortly after taking charge of the Bureau of Mines Van H. Manning issued the following statement addressed to the members of the bureau:

"Through the efforts of Dr. Holmes the Bureau of Mines was established, and through his unceasing efforts to make it an agency for the increase of safety and efficiency in the mineral industries it has grown in public favor and has received increasing support. But the bureau would not have attained its present standing had not Dr. Holmes received the loyal cooperation of those who were laboring with him to make the bureau contribute more fully to the public good, and the list of these persons includes, I believe, every member of the bureau.

"In taking charge of the bureau, I freely acknowledge the inspiration I have derived from being associated with Dr. Holmes during the time that he was Director, and I shall constantly endeavor to make the bureau what he wished it to be. But as Director I shall have to rely on your loyalty, your cooperation, and your desire to advance the usefulness of the bureau. For this reason I hope that you will let me know promptly of any troubles or difficulties that arise in the course of your work, and will not hesitate to offer suggestions that you think will make for greater efficiency or will enable the bureau to be of greater aid to those whom it aims to serve.

"A vast field of usefulness lies before us. What the bureau has done is merely an evidence of what it can do. If its members continue to show the same high sense of duty, the same ambition and perseverance that have marked their work hitherto, the bureau will receive ungrudging support from the public and its influence for good will be felt throughout the world."

ENGINEERS DISCUSS PROBLEMS OF STREAM-GAUGING WORK

Engineers of the water resources branch of the Geological Survey held a conference at San Francisco during the week of October 18 and discussed the problems pertaining to the work of the branch. Twenty-five engineers from all sections of the country attended. As the stream-gauging work is conducted throughout the year from fifteen district offices, the field men have no opportunity for discussing improvements or proposed changes in instruments, equipment, or methods of work except at such conferences, which are held occasionally at Washington or at a convenient western city.

Niter Deposits Attract Attention

Niter deposits near Thistle, Utah, are attracting attention. Samples recently analyzed are said to have given very favorable results.

IS INCOME TAX LAW UNCONSTITUTIONAL AS APPLIED TO MINING COMPANIES?

Supreme Court of United States to Hear Arguments on This Question in the Case of John R. Stanton Versus the Baltic Mining Company— The Five Per Cent Clause

Owing to the proximity of the arguments before the Supreme Court of the United States in the case of John R. Stanton *vs.* Baltic Mining Co. *et al.*, some of the points involved in this case are of general interest.

One of the questions involved is whether the income tax law is unconstitutional as applied to mining companies.

It is agreed that the 5 per cent clause is unconstitutional and void, or that the income tax law as applied to mines, is void. The reasons given for this conclusion are as follows:

The natural or necessary effect of the clause, when the real substance of things is reached, is to tax directly some portion of the company's principal as if it were income, without apportionment according to population, and, indeed, a very substantial amount of its capital assets.

It violates "due process of law" and "equal protection of the laws" in the following respects: because it is palpably arbitrary classification, for purposes of taxation, resting on no reasonable basis for distinction; because it cannot fairly be suggested that there is any "fair reason for the law that would not require, with equal force, its extension to others whom it leaves untouched;" because the classification and the purpose of the act, namely, the ascertainment of "net income" for purposes of taxation, must bear some "reasonable and just relation" to each other.

This classification of mining companies, as against other classes of corporations, rests wholly upon accidental, inconsequential differences which have no material or just bearing upon the purposes of the legislation.

A deduction from "gross receipts" can have no possible bearing on or relation to the purpose of the act, namely, to ascertain the tax "net income."

The act arbitrarily imposes one rule for valuation of income, or in effect, a different rate of direct taxation on one kind of business corporation and a different rule or rate on another kind.

The law does not apply equally to all within the same classifications, for it affects different corporations in distinct ways, mining companies being discriminated against, although in the class composed of corporations, all of which are under like conditions, so far as the same are material.

The taxation is especially discriminatory, unequal and arbitrary, when the effect on holding and operating companies is considered, amounting to double taxation, whereas all other corporations and all individuals, even individual shareholders in the same operating company, are subjected only to a single tax.

The $4,000 exemption of individual incomes and the exemption of labor, agricultural and other organizations unlawfully discriminates against all corporations.

SMOKE TROUBLES CHECK SHASTA COUNTY OUTPUT

A visit to the Shasta County copper district was made recently by B. S. Butler, of the Geological Survey in company with Prof. L. C. Graton, of Harvard University. They visited the principal mines and made personal examinations underground in many of the properties.

The deepest mines in the Shasta County district are nearing the 500-foot level, but the average depth is considerably less.

Production in this region has not increased in recent years, due almost entirely to the fact that only one smelter can run on account of smoke troubles. Two large smelters are closed down on this account.

The Iron Mountain Co. has developed a considerable amount of chalcopyrite concentrating ores for the treatment of which a mill using the flotation process was put in and operated during the summer.

Despite the inadequate smelter facilities, most of the mines are working full force.

At the Mammoth mine a considerable tonnage of zinc ore is being produced. This zinc was developed previously, but was left untouched in the mine until the recent increase in price justified its extraction.

In the same general region is the Bully Hill district, in which experimental work is being done with the electrolitic treatment of copper and zinc ores. Encouraging results are being obtained.

The operators in these districts are doing considerable development work within their mines and are taking up additional lands. They have splendid transportation facilities. Most of the properties are able to handle their ores by gravity a portion of the distance to the smelter.

ONLY A PART OF THE MEMBERS OF THE AMERICAN MINING CONGRESS WHO ATTENDED THE

GREGORY FINISHES REPORTS ON THE NAVAJO COUNTRY

Prof. Herbert E. Gregory, of Yale University, who has been doing some work for the Geological Survey for the past several years in the Navajo country, is in Washington putting the final touches on two reports. One will be published under the title of "Geological Reconnaissance of the Navajo Country;" the other, "The Navajo Country, Its Geography and Its Water."

The Navajo country as referred to by Professor Gregory, includes the area in Utah and Arizona between the Santa Fe R. R. and San Juan River, and between the Colorado and Little Colorado Rivers.

Professor Gregory has been granted a year's leave of absence from his chair at Yale. A part of this time will be spent in the West and the remainder in Australia. He goes to Australia to study the great desert which forms the central part of that continent.

He will investigate general physiographic conditions in a real desert, as they may be compared with the so-called deserts of the United States. This Australian trip will have a bearing upon the work Professor Gregory has been doing in the Colorado plateau country. While this trip is not being made directly for the Geological Survey, much of the research which will be conducted by Professor Gregory probably will find its way into subsequent publications of the United States Geological Survey.

PETROLEUM WITHDRAWALS AND RESTORATIONS IN NEW REPORT

A work which will contain all orders of petroleum withdrawals with restoration and classification from 1865 to November 1, 1915, is being prepared by the Geological Survey.

The report is to be entitled "Petroleum Withdrawals and Restorations Affecting Public Domain." It is by Max W. Ball and Miss Lucetta W. Stockbridge.

The work will be complete with township index, referring to all orders affecting each township. In addition there will be a chapter on the history and purposes of withdrawals and a chapter on the oil land laws.

There are 685 pages of manuscript in this report beside eight maps, which show the present outstanding withdrawals.

The report will not be ready before January 1. This is the most pretentious work along this line ever attempted, and will fill a need which has been growing more urgent during recent years.

MORA DIAMOND NOT HIGHLY VALUABLE CLASS OF GEM

Inquiries recently have been made for definite information regarding the mora diamond. The Geological Survey has no definite information regarding this class of gem.

From another source it is stated that mora diamond is simply a pure colorless quartz. Its value after cutting would not exceed $1, or at most $2 per carat.

White sapphire is a colorless clear variety of corundam. It is found associated with other colored sapphires at different mines principally in Ceylon. A few stones which might be called white sapphires are found with variegated sapphires of Montana. It is probable that some of the stones sold as white sapphires are the synthetic variety made by fusing pure aluminum oxide. According to the Geological Survey, the value runs over $7 per carat for the natural stone.

BUREAU OF MINES' GAS AND OIL WORK COMPLIMENTED

That the Bureau of Mines' work is appreciated by oil men is indicated by the following extract from a letter from Alfred J. Diescher, of the Wichita Pipe Line Company. The letter is addressed to the Secretary of the Interior, and reads in part:

"For some time we have been observing the work done in the oil and gas industry, and specially in the mid-continental field, by the Bureau of Mines, along the line of conservation measures, devices and policy; also in the general development of the industry, and we desire to express our appreciation of the excellent work being done by the Bureau of Mines and its great benefit to the industry.

"If there is any way we can cooperate to assist in this work we shall be pleased to do so at any time, and hope that the work now started by the Bureau will be extended in scope from time to time. There is no question of its great value and far-reaching good effect upon the entire industry both as to conservative and economic effect."

ANNUAL CONVENTION IN SAN FRANCISCO WERE PRESENT WHEN THIS PHOTOGRAPH WAS TAKEN

COAL MINES OF UNITED STATES EMPLOY 750,000 MEN

A greater number of men were employed in the coal-mining industry in the United States in 1914 than ever before. According to C. E. Lesher, of the United States Geological Survey, the total number of employes in both anthracite and bituminous mines for the first time exceeded three-quarters of a million. This record was made without sacrifice of efficiency, for although the average number of days worked in the bituminous mines was the smallest since 1896, except only 1908, and the average output per man for the year was the lowest in 5 years, the average daily production by each employe in 1914 was the highest on record in bituminous coal mining. This record is to be attributed not so much to the better character of the labor as to improved mining methods and the increased application of scientific management.

The number of men employed in the coal mines of the United States in 1914 was 763,185, of which number 179,679 were engaged in mining anthracite and 583,506 in mining bituminous coal and lignite. The average number of days of employment of each man was 207 for the United States, 195 for bituminous and lignite, and 245 for anthracite. In the bituminous mines the yearly average decreased from 837 tons in 1913 to 724 tons in 1914. The daily average increased from 3.61 to 3.71 tons. The average time made at the anthracite mines in 1914 was exceeded only by the records of 1911 (246 days) and 1913 (257 days). The average yearly production of anthracite by each employe decreased from 520 short tons in 1913 to 505 tons in 1914, owing to the fewer days worked. The daily output per man was 2.06 tons, a slight gain as compared with 2.02 tons in 1913.

WORK COMPLETED ON IMPORTANT CALIFORNIA QUADRANGLES

Important work in several quadrangles in northern California and southern Oregon was completed during last summer by J. S. Diller.

The Redding quadrangle is of particular importance on account of its copper deposits which are classed among the most important in the United States.

The Coos Bay quadrangle in Oregon is attaining more importance owing to the development of coal on this section of the Pacific Coast.

The Orford quadrangle also is attracting additional attention owing to the increasing importance of the gold placers in this part of the Oregon Coast.

Mr. Diller also covered a much wider territory making investigations from an economic standpoint. He was assisted in a portion of this work by Prof. G. F. Kay, who recently has been made State Geologist of Iowa.

SEES AID FOR BUSINESS IN MINING CONGRESS JOURNAL

A. Cressy Morrison, Secretary of the International Acetylene Association, has the following to say of the MINING CONGRESS JOURNAL:

"Sometime ago I wrote you expressing my appreciation of the MINING CONGRESS JOURNAL. I desire to reiterate that appreciation. Under various headings, you seem to accumulate a vast amount of information, especially as to what the Government is doing for mining, and in these items can be found matters of immediate interest to almost anyone in active business."

PRELIMINARY GILPIN COUNTY REPORT GOES TO PRESS

E. S. Bastin, of the Geological Survey, just has sent to press a preliminary report on the geology and ores of Gilpin County, Colorado. It is probable that this report will be available for distribution in sixty days. It is an abstract of a complete professional paper on this subject which Dr. Bastin has prepared.

METAL PRODUCERS GRATEFUL FOR BUREAU OF MINES AID

A well-worded letter of thanks written by the California Metal Producers Association has been received by the Bureau of Mines. The Metal Producers are very grateful to the Bureau for its assistance in the recent field meet at San Francisco.

Copper Report Complete

The general Geological Survey report on copper by B. S. Butler has been completed and will be ready for distribution within a few weeks.

SUPPLIES OF BULLETINS TO BE SENT MINERS' ORGANIZATIONS

In order to circulate more largely certain bulletins of the Geological Survey which are of special interest to mining men, arrangements can be made to send fifty copies of each of the following bulletins to the secretary of any State chapter of the American Mining Congress, secretary of any miners' club or other miners' organization. Single copies will be furnished individuals, but the fifty copies will be sent only to organizations of mining men.

In addition to the list given below, other bulletins will become available from time to time, to be distributed in the same manner. Those ready for distribution at present are:

Contributions to Economic Geology. Metals and Nonmetals except Fuels, by David White. Bulletin 540.

Ore Deposits in Northwestern Custer County, Idaho, by Joseph B. Umpleby. Bulletin 539.

Contributions to Economic Geology. (Short papers and preliminary reports.) Mineral Fuels, by Marius R. Campbell. Bulletin 541.

Contributions to Economic Geology. Mineral Fuels, by Marius R. Campbell. Bulletin 531.

Contributions to Economic Geology. Metals and Nonmetals except Fuels, by Waldemar Lindgren. Bulletin 530.

MINING ENGINEERS ALSO DO GENERAL DRUG BUSINESS

A certain firm advertises as Chemists, Perfumers and Mining Engineers. Claims made in the announcement are: "Specialists in toilet lines," "Mining properties examined," "Assaying," "Antiseptic lotions compounded."

It may be stated in this connection that this firm actually exists and is serious in its combination of activities.

NEW MOTION PICTURE FILMS ADDED TO COLLECTION

Splendid results are being achieved by the Bureau of Mines through the extensive exhibition of its motion picture films. Two new films just have been added to the interesting collection already owned. The new films are entitled "Social Welfare, or the Human Side of Mining," and "Sanitation of Mining Villages."

The first film portrays the life of a miner when not in the pit. It dwells on his pleasures and touches his sorrows. The activities of a mining village are shown. An inning of baseball between miners' teams is shown. A violent handball contest brings plenty of action into a section of the film. A boxing match is full of interest. The village brass band giving a concert and a club room scene show the interest in these features.

In addition, the workmen are shown how to dress wounds, and a vivid mine rescue scene is shown. The children's playground with two giant swings, coaster and sand box, flashes on the screen. A fire drill in a modern schoolhouse is an interesting feature. The Camp-fire Girls and a girls' basketball team come in for attention. The celebration of a public holiday with its parade, races, target practice and efforts to climb a slippery pole also are shown.

In the second film are shown: Sanitary wash and change house; sanitary bath; carrying water to the pump; sanitary outbuildings; danger of the fly and mosquito; model dairy and model houses for miners.

GEOLOGIST FINDS ROUND MOUNTAIN MINING DISTRICT INTERESTING

Interesting communications from H. G. Ferguson have reached the United States Geological Survey, with respect to the Round Mountain mining district of Nevada. Mr. Ferguson recently suspended temporarily his detailed work at Manhattan, Nev., in order to make a study of Round Mountain and the intervening country.

He found the Round Mountain mine of the greatest interest and expects his study to develop matters of considerable geological and economic interest.

R. H. Ernest, manager of Round Mountain mine, has an extensive collection of free gold in quartz. Through Mr. Ferguson a number of these were sent to the Geological Survey that specimens might be detached.

Mr. Ferguson also examined some tungsten prospects in the vicinity of Round Mountain. Before returning to Manhattan he will make an examination of the Golden Arrow district which is 40 miles east of Tonopah. This district recently has begun shipping ore and is attracting considerable attention.

EXTENSIVE GEOLOGICAL WORK FOR MT. RAINIER PLANNED

During his recent trip through the West, Dr. George Otis Smith, director of the United States Geological Survey, planned for extensive geological work on Mount Rainier, Washington.

He visited field parties in Texas, Nevada and California. He also visited the office of the Survey in Salt Lake City and San Francisco.

The principal object of the trip, however, was to deliver an address at the annual convention of the American Mining Congress.

While in San Francisco, Dr. Smith attended the conventions of the American Institute of Mining Engineers and the International Engineering Congress.

Report on Loco Gas Field

A report on the Loco gas field of Oklahoma just has been prepared by the U. S. Geological Survey and the Survey of Oklahoma. Each organization furnished a portion of the funds for the work. This gas field has a promising future, judging from the statements made in the report.

UNCONDITIONAL COOPERATION WITH BUREAU OF MINES PROMISED IN WEST

Director Manning Greatly Pleased with Friendly Attitude of Owners and Operators Met on Recent Trip to California and Other States—Guest of Montgomery

If there were any doubt that the Bureau of Mines is to enjoy willing cooperation on the part of mine operators, it would have been dispelled on the recent trip through the West made by Van H. Manning, director of the Bureau.

Mr. Manning went to San Francisco to deliver an address before the American Mining Congress. This address appeared in full in the October issue of the MINING CONGRESS JOURNAL. While in San Francisco, Mr. Manning attended the other engineering conventions which were held at about the same time.

This trip gave Mr. Manning an opportunity to meet a very large number of mine operators not only in San Francisco but at the frequent stops made on the trip West and on his return.

Any feeling that may have existed in the past that the Federal Bureau might prove to be a busy-body which would work out impossible schemes and hamper the industry rather than benefit it, has been dissipated entirely, if the general expression of mine owners met on this trip is taken as a criterion of the opinion of the entire industry.

RECOGNIZE A REAL SERVICE

The feeling so freely expressed to Mr. Manning was one which looks to full cooperation with the Bureau of Mines. There seems to be a general realization that the work of this Government agency is being conducted on a highly intellectual plane, with such regard to practical questions as to make it a service to all interested in mining.

One of the things which impressed Mr. Manning most forcibly was the showing made at the field meet September 22, 23 and 24. This included mine-rescue and first-aid contests. Miners came from all parts of mining territory. Alaska, West Virginia and other points far distant from San Francisco were represented.

Mr. Manning was impressed that 200 miners were entered in these contests, and was surprised at the amount of interest displayed in striving for the forty-five prizes which were offered winning teams. It demonstrated to the director that the whole mining industry is taking active interest in this work, which has been one of the principal aims of the Bureau since its founding.

INTEREST IS GENERAL

Mr. Manning was gratified particularly at the undisputed evidence of the interest being shown by both operators and miners. The fact that many of the operators gave the members of the teams double time, traveling and miscellaneous expenses is one evidence of the interest they feel. On the other hand, some of the miners participating in the contests paid all their own expenses occasioned by the trip to San Francisco.

The fact that President Moore, of the Panama-Pacific Exposition, and a great concourse of spectators attended the field meets indicates the amount of popular interest in first-aid and mine-rescue work.

On the way to San Francisco Mr. Manning was the recipient of various courtesies from mining men in different points en route, particularly at Chicago and Salt Lake City.

After leaving San Francisco, he went to Los Angeles, where E. A. Montgomery tendered a banquet to Mr. Manning, Carl Scholz, newly re-elected president of the American Mining Congress, and George S. Rice, chief engineer of the Bureau of Mines. Here thirty prominent mining men of southern California were introduced to the guests of honor, and very instructive talks resulted.

VISITS UNIVERSITY

From Los Angeles, Mr. Manning went to Tucson, Ariz., at the request of the University of Arizona. While here Mr. Manning was made familiar with the reasons why Tucson thinks it should be the site of one of the ten mine experiment stations authorized at the last session of Congress. Mr. Manning had a record made of the reasons advanced and will give it careful consideration.

As a guest of the officers of the Copper Queen Consolidated Mining Co., Mr. Manning visited Bisbee. He spent a day at the mine and a day at the metallurgical plant at Douglas.

In order to inspect the plant of the Bureau of Mines at Denver, Mr. Manning visited that city, and made a careful personal inspection of the work in progress.

Gold Output $250,000

Placer gold was first mined in the Chisana-White River district of Alaska, in 1913, when between $30,000 and $40,000 was recovered. Last year over twenty claims contributed to the production, and gold to the value of more than $250,000 was mined.

UTAH FUEL CO.'S SUNNYSIDE NO. 2 TEAM

Winners of Mine Rescue Contest at Panama Pacific International Exposition 1915. Left to Right: Rear, M. H. Detweiler, Captain; Zeph Thomas, T. J. Johnson, George Usher; Front: George Clark, J. W. Littlejohn

SUPERIOR FUEL COMPANY THANKS HELMET CREW

Work on the part of the Bureau of Mines helmet crew in the mine of the Superior Fuel Company, of Russellton, Pa., has called forth the sincere thanks of the company.

The mine had been sealed on account of fire. It was the opinion of the officers of the company that the fire was out, but they could not be certain. They knew the mine contained 20 per cent of marsh gas and feared to open the mine lest a smoldering fire might flame up with the entrance of oxygen.

The matter was taken up with the Bureau of Mines and the helmet crew was sent to Russellton. The crew went into the mine 2,400 feet in advance of the air and could find no evidence of heat. They took samples of the gases and analyzed without doubt In this way they established without doubt the fact that the fire had been put out, and the property has been reopened for operation.

NEARLY 1,500,000 ACRES DESIGNATED FOR ENTRY

Nearly 1,500,000 acres were designated for entry under the enlarged homestead act during September. This includes 434,000 acres in Idaho, 123,000 acres in Montana, 365,000 acres in New Mexico, 352,000 acres in Oregon, 142,000 acres in Wyoming and 18,000 acres in Kansas.

The number of requests to designate lands for entry received during September were 1,486.

With the limited force available for this work and the extreme complexity of some of the problems involved, it was possible to act upon only 850 of the petitions received.

In all there are more than 5,000 petitions awaiting action. It is necessary to group these petitions in areas so that those coming under the same general conditions may be considered at the same time. As the Land Office, which also has to handle these petitions, handles them in land districts, the Geological Survey attempts to group them in the same way.

POWER TO REGULATE USE OF WATER BELONGS TO STATES, SAYS SENATOR SMOOT

Utah Lawmaker Declares Amendment to Constitution Will be Necessary to Carry Out Government Policy as to Water-Power—History of Fundamental Law Reviewed

Reed Smoot, United States Senator from Utah, delivered an address before the Portland Water Power Conference which is classed by many as one of the most able works yet to appear on the subject of a federal tax on water powers.

A portion of this address follows:

Before the adoption of the Constitution of the United States and the inauguration of President Washington, this country did not have in a true sense a national government. The actual governments were the governments of the thirteen original States. For purposes of defense against British oppression there was, indeed, among these States a union and interdependence of action which were finally and formally announced to the world in the Declaration of Independence, and gloriously achieved by the War of the Revolution.

Subsequently, under the articles of confederation, an effort was made to provide a form of government for this union; but it signally failed, for the simple reason that the chief powers of government, of sovereignty, of a jurisdiction, of eminent domain in a broad sense, were withheld from it. Chief among these powers, the lack of which well nigh reduced the confederation to impotency and dissolution, were the powers to raise money by taxation and by loans on the credit of the United States, and the power to regulate commerce with foreign nations and among the several States.

A LEAGUE; NOT A NATION

In fact, the articles of confederation created a league of sovereign States and not a nation. Its Congress, as the name originally implied, was an assembly of delegates from the States. It was deliberate and advisory, rather than a legislative body. It could make requisitions upon the States, but it had no power of collecting them. It could not act directly upon individuals at all. It remained, therefore, for the Constitution to create the nation as an entity, and to provide for it a national government with sovereign powers.

It is very interesting and important to note that the first effective step which led to the calling of the Philadelphia convention which framed the Constitution was a meeting of commissioners of the States of Virginia and Maryland at Mount Vernon in 1785, for the purpose of settling "the jurisdiction over waters dividing the two States."

This was followed in 1786 by a resolution of the Virginia legislature proposing a meeting of deputies from all the States to discuss the best means of securing a uniform treatment of commercial questions.

MADISON'S COMMENT

Pursuant thereto a convention attended by deputies from only five States met in the fall of 1786 at Annapolis; and, in the words of Mr. Madison, this convention "then as it was, did not scruple to decline the limited task assigned to it, and to recommend to the States a convention with powers adequate to the occasion."

As you all know, it was in conformity with the call of the Annapolis convention, drafted by Colonel Hamilton and unanimously agreed to, that the great convention met at Philadelphia in 1787 and evolved the Constitution under which we live and have grown to be the foremost nation in the world.

The purpose of that convention in framing the Constitution and of the people of the States in adopting it, as declared in its preamble, was to form a more perfect union, establish justice, insure domestic tranquillity, provide for the common defense, promote the general welfare and secure the blessings of liberty to themselves and their posterity. In order to carry out these purposes the States and their people delegated to the general government certain powers of a national character, and expressly declared that the Constitution and the Laws of the United States made in pursuance thereof, should be the supreme law of the land. Of necessity, and by the express terms of the tenth amendment, the powers not delegated to the United States by the Constitution nor prohibited by it to the States, are reserved to the States respecively, or to the people.

There was thus created a dual form of government, federal and State, each sovereignty operating directly upon the same individuals—a thing unknown before in the world's history. To preserve that form of government in its integrity, both as respects the States and the nation, should be the prayerful purpose not only of our statesmen but of all patriotic citizens. It is a sacred heritage, transmitted by us in all its vigor and glory to our posterity.

UTAH'S PROVISION

The constitution of my own State of Utah contains a declaration that "frequent recur-

rence to fundamental principles is essential to the security of individual rights and the perpetuity of free government," and that of the Commonwealth of Massachusetts likewise declares that "frequent recurrence to the principles of the constitution is one of the things absolutely necessary to preserve the advantages of liberty and to maintain a free government."

The first of the enumerated powers of Congress under the Constitution are the power to raise money by taxation and loans, and the power to regulate commerce—powers, the lack of which rendered the old confederation lame and impotent.

Ever since the decision of Chief Justice Marshall in the case of Gibbons against Ogden, to the effect that the power delegated to Congress to regulate interstate commerce comprehended the power to regulate and control navigation, notwithstanding the laws of any States to the contrary, there has been no doubt whatever concerning the power of Congress over the navigable waters of the nation for that specific purpose. But the power to regulate and control the appropriation and use of water for all other purposes, inherent in the States, and not delegated to the United States by any provision of the Federal Constitution, still resides in the several States, and, in my humble opinion, they can only be deprived of this power by an amendment of the Constitution.

DISCUSSES FERRIS BILL

Frank H. Short Talks on Its Constitutional Aspects at Water Power Conference

Just how unfair the Ferris bill is to the West was brought out in a striking manner by Frank H. Short, of California, in an address at the Portland Water Power Convention. Extracts from this address follow:

Probably the most important provision of the Ferris bill is contained in Section 8. That is to say, with respect to the workability of the bill and the development of industry and its ultimate effect upon the States.

This contains the provision "That for the occupancy and use of lands and other property of the United States permitted under this act, the Secretary of the Interior is authorized to specify in the lease and to collect charges or rentals for all land leased, which charge or rental may in the discretion of the Secretary of the Interior be measured by the power developed and sold or used," etc.

Following this is an exemption for power used in operation, and a provision that 50 per cent of the revenue that is obtained shall be paid to the State, and later, a provision for the use of the other half for the reclamation purposes of the United States. And with a further provision that leases for the development of power by municipal corporations for municipal uses shall be issued without rental charge.

INCONSISTENCY SHOWN

We have been very earnestly assured that these rentals will be insignificant and unimportant, but as a very great favor to municipal corporations, they are to be exempted from paying a rental charge of no real importance to anybody. But the consideration that interests me is that under this law, regardless of the value of the right of way or its rental value, the Secretary of the Interior may measure the rental by the power developed, which rental when so measured might be ten times or a hundred times or a thousand times as great a rental per annum as the entire value of the right of way leased from the United States.

If such an authority can be conferred upon an individual official or if such a charge can in any way be imposed for a use of a right of way, measured by the power developed, then a corresponding authority can be given to impose a charge for the lease of a right of way for tonnage shipped over a railroad or for freight transferred over a highway, or for irrigation water transported through a ditch, and the equality of right and opportunity and of taxation guaranteed to all of the States will stand effectually repealed in every one of the public land States.

A statement of the proposition is sufficient to discredit it with any person having an elementary knowledge of constitutional principles and constitutional right.

AN ILLUSTRATION

It has been found quite sufficient to promote the policy in the East upon the theory that it is for the benefit of all of the people of the nation, and in the West upon the theory that it is exclusively for the benefit of the people of the public land States. In this connection I desire to repeat an illustration which I first publicly stated at the Conservation Congress in St. Paul, as follows:

"We assume that Uncle Sam is the father of four sons, and for the purposes of historical and geographical accuracy we refer to them as East and North and South and West, and Uncle Sam, being mindful of a trust and generous to a fault, has proceeded to distribute to East and North and South, who are the elder children, that portion of his magnificent estate and domain that pertained to them. Whether this was done wisely or otherwise we are not here discussing. It is sufficient to say that it has been done, and that at the time it was done that portion of the common property that pertained to the estate of the younger brother, West, was supposed to be of little value.

"But the younger brother, being resourceful and industrious, has demonstrated the value, the potential power and the taxable resources of his leftover and supposedly arid portion of the public domain. That it was not until this situation developed that a

great idea of regeneration and moral uplift seized the minds of East and North and South. And the more they thought about it, the worse they apparently felt about it.

"Finally, our brethren went to Uncle Sam and said, 'Father, in the distribution of that portion of your estate which you have distributed to us and to our children, you have greatly impaired the family estate and inheritance, and you have sinned against Heaven and in the sight of all men, and we can suggest no adequate atonement or reparation except that you shall now seize, take and hold all that portion of your estate that was supposed to belong and descend to our younger brother, West, for the benefit of the whole family."

THE HONEST WAY

Assuming that we should propose now to amend the Constitution to fit the situation, it would necessarily be provided about as follows:

"The rights of each and every one of the States to this Union shall be equal, and all States admitted to the Union shall be admitted of equal right, opportunity and authority in all respects whatsoever with the original States: excepting and providing, however, That in those States wherein there is or may be situated lands belonging to the United States, that within such States and with respect to the use of ways and easements thereover and the development of the industries thereon, the United States Government may as to the industries so located and as to the people owning or operating the same, exercise such exceptional power and impose such exceptional charges upon and conditions connected with such use and enjoyment, and impose such restraints over such industries, and exercise such governmental and regulative authority thereover and within such States, as in the judgment of the United States and its officials shall be beneficial and proper."

It is very interesting to consider that no one would probably suggest or advocate this or any similar amendment, and yet by indirection we appear to be very ready to violate the principles of the Constitution, where nobody would advocate a direct amendment legitimately permitting the same thing.

This fight is upon principle and not upon policy, and it is going to go on until all unrepresentative, unconstitutional and unequal government is dead in this country, and I hope to live long enough to see this doctrine that reflects upon the western people and the western States, and questions their capacity for self-government, equally with all of the other States, taken out and buried in some good, old-fashioned cemetery, in the good, old-fashioned way, under the sod and the dew, there to await the wrath of God and the Judgment Day.

SPEAKS AGAINST BILL

Clyde C. Dawson Urges that Decided Stand be Taken on This Class of Legislation

Clyde C. Dawson, of Denver, spoke on Ideal Conservation, at the Water Power Conference. In part he said:

My objections to the Ferris bill go deeper than to any specific provisions of the measure. Its whole tenor is contrary to the spirit of our free institutions and of our fundamental laws. In its present form it is obvious, and hardly needs the testimony of practical men, that the bill will not encourage investment and development; but it is equally obvious, and should be recognized by every citizen, that the exercise of such powers by the Federal Government within the public land States tends to reduce those States to mere provinces and to sap and undermine the very foundations of our Union.

I well realize that there are some gentlemen interested in power companies who are extremely desirous of having Congress pass some bill under which they may reap the profits of financing and promoting these enterprises. But this is not a question to be determined and settled by arrangements made and entered into between the power companies and the administrative officials in Washington. It is a question which concerns all of the people, and no legislation should be countenanced which tends to break down our constitutional form of government. The question involved is one which concerns the conservation of the Constitution itself, and the rights and liberties of all the people.

WILL NOT PRODUCE RESULTS

The advocates of this class of legislation may say that the criticisms by its opponents offer nothing of a practical nature in the place of the program which they are seeking to carry out. The professed purpose and aim of all are, indeed, identical—to provide for the broadest possible development of the water power resources of the country. All unite in saying that this is ideal conservation. We think we have sufficiently demonstrated that the methods of the Ferris bill will not produce the desired results. And when they ask us what we would substitute in its place, our answer is, that the existing acts of Congress, properly construed, permit the development of these resources under the control and regulation of the local laws; that there should be no legislation which does not recognize and reaffirm the fundamental principle that the States have the right and authority to control their own purely internal affairs, and that the title to the public lands is held in subordination to this rule of law.

SHOULD AWAIT COURT ACTION

These very questions are now pending in the Supreme Court of the United States, the

only final arbiter under the Constitution. Why should Congress now seek to make the confusion, brought about by administrative misconstructions, worse confounded by assenting to that misconstruction?

There are many of our ablest living statesmen who now contend, as was contended years ago by Jackson, Benton and others, that the proper solution of this question is for the Federal Government to turn over to the States the title to all the remaining lands within their borders. In 1833 President Jackson said in a message to Congress:

"On the whole, I adhere to the opinion expressed in my annual message of 1832, that it is our true policy that the public lands shall cease as soon as possible to be a source of revenue, except for the payment of those general charges which grow out of the acquisition of the lands, their survey and sale. I do not doubt that it is the real interest of each and all the States in the Union, and particularly of the new States, that the price of these lands shall be reduced and graduated, and that after they have been offered for a certain number of years, the refuse remaining unsold shall be abandoned to the States and the machinery of our land system entirely withdrawn."

However we may view this solution of the question that is a matter that rests with Congress. But the jurisdiction over the public lands within the States is vested in the States not by virtue of any act of Congress, but by the fact of their being States of the Union, and by the express terms of the Federal Constitution.

INCREASED COAL TONNAGE TO BE MINED IN WYOMING

Union Pacific Railroad Doing Active Work In Hanna District of Carbon County

Field work in the Hanna coal area in Carbon County, Wyoming, has been completed by C. F. Bowen, of the Geological Survey.

It is in this field that the Union Pacific Railroad has important mines and, in fact, this company is doing all the mining now in progress in this region.

The railroad company is operating four mines, three of which are being conducted on a large scale. Mining is being done on two beds of coal which are 1,500 feet apart, stratagraphically.

In addition to these two beds, there are a great many others in the field, some of which are as thick as those now being worked, and which are wholly undeveloped.

It is the opinion of Mr. Bowen that there is room for a decided increase in coal mining in the Hanna field. There is plenty of opportunity for the entrance of private companies. Most all of the territory, except the original grant to the Union Pacific, is public land. It is understood that the Union Pacific has bought up little land outside of its original grant. This leaves plenty of vacant land and plenty of coal for other companies if any should desire to enter the field.

The Union Pacific, in addition to supplying its own needs, is retailing a small amount of coal, which is being sold at reasonable prices.

The coal of the Hanna district is a high-grade subbituminous coal. It is very soft and slacks readily. It will not stand storing well. It is very light and blows away under forced draft, which reduces its efficiency for use in locomotives or under the average commercial boiler.

As a domestic fuel it is greatly in demand, as it gives a quick heat and holds fire well. Owing to its tendency to spark, the use of this coal has caused numerous fires, especially along the railways.

Mr. Bowen mapped three quadrangles this summer, including most of the Hanna region which takes in practically all of the important coal deposits.

Some drilling is being done for oil in the Medicine Bow, Wyo., region. One well was drilled about ten miles south of Medicine Bow and it is reported that some oil and gas were encountered. Definite information as to the amount is not available.

The structure and the geology are favorable to the occurrence of oil, but there are no surface indications of its presence.

Considerable oil excitement is in evidence at Kindt Basin and at Eight-Mile Lake, near Rawlins, Wyo. Some oil has been found at Eight-Mile Lake, but information as to the amount is not obtainable.

This same general region is rich in gypsum. It is being mined in the Laramie Basin. It also produces a clay which is being used in filling paper and as an absorbent.

WIRE MANUFACTURERS JOIN IN EFFORT TO MAKE NEW CORD

In order to develop a more serviceable cord for portable electric gas lamps, the Bureau of Mines has obtained the cooperation of six large electric wire and cable manufacturers in an effort to develop a better cord than now is on the market.

Each of the manufacturers will make up a cord, which will be tested by the Bureau in order to see which is best suited for mining service.

Mining Congress members are requested to advise the Washington office of any change of address. Copies of the MINING CONGRESS JOURNAL are being returned for want of a proper address. This applies to some of the first-class mail addressed to members.

HARNESSING OF COLORADO RIVER NOW IS ONLY MATTER OF MONTHS

First Big Dam Is Being Arranged for near Peach Springs, Ariz., Just below the End of the Grand Canyon—First Unit Will Develop 50,000 Horsepower

By H. J. Minhinnick

A development of most vital importance to nearly every mining interest in Arizona and Southern California is the proposed harnessing of the Colorado River and the furnishing of electric power to all mines and camps within the radius of possible service.

From source to mouth the Colorado falls a distance of more than 8,000 feet and its mean annual discharge is given by the Geological Survey at 30,000 second feet. The possible horsepower that could be generated if all the flow were usable would thus be in the neighborhood of 20,000,000 or enough to turn practically all the wheels of every industry in the nation.

Several things have conspired to prevent the use of this great natural source of power. First, the river is largely inaccessible, there having been found but six good dam sites on the entire length of its upper course. Second, it is subject to terrific floods such as that which, in 1891 broke through the banks of the lower reaches of the river and formed the Salton sea.

MUST HANDLE RISES

To make the power available there were required the finding of suitable dam sites and the building of suitable dams, the latter so designed as to make possible the handling of the enormous rises which semi-annually pour down the river.

James B. Girand, former territorial engineer of Arizona and a man known throughout the Southwest as a thorough engineer and master bridge builder, has solved both problems. The first by locating six dam sites immediately west of the end of the Grand Canyon of the Colorado and the second by his patented and well-tested "multi-cellular" dam which is so designed as to resemble a great honeycomb, the cells of which may be thrown wide open in times of flood permitting the comparatively free and unrestricted passage of the waters.

He has received permits from the Department of the Interior for the construction of his six dams and from the Patent Office he has received the necessary protection on his method of dam building.

The project is one that has engaged the engineer for almost a score of years. Beginning in 1898 he made a careful survey of the Grand Canyon itself, spending a little more than two and one-half years at the bottom of the great crevasse which he and his companions mapped for a great part of its course, some of these surveys being the first that had ever been attempted.

OPPOSES DAM IN CANYON

The Government opposed any idea of granting power permits within the limits of the Canyon and, perforce, the engineer continued his search further to the west and here his long years of work were rewarded. He located six sites, each capable of developing 50,000 or more horsepower and for the use and development of these he has received the necessary permission from the Department.

A road-making party is now in the field building a road from Peach Springs on the Santa Fe Railroad to the dam site on the river distant only twenty-one miles. At this point the banks of the stream are so accessible that an automobile can be driven into the water.

Dam site No. 3 is just above this point and here the first unit of the project will be built. As soon as the road is completed supplies for the building of a camp will be sent in and the work commenced. It is intended that the first power plant shall be completed and in operation within eighteen months.

Within a radius of 300 miles of this dam lie nearly all the great mines of Arizona and southern California and it is expected that the initial installation of 50,000 horsepower will be largely used in supplying current to these plants. Contracts are in contemplation with both the Santa Fe and the Southern Pacific railroads for the electrification of their lines across the continental divide where both roads have to lift their trains a vertical height of more than a mile.

A contract also has been considered for the furnishing of electric power to the new plants at Ajo and Cornelia as well as to the mines in the northern part of Arizona.

TO RECOVER NITROGEN

While the furnishing of power to the mines is one of the prime objects of the installation, it is intended also to manufacture artificial fertilizers from the nitrogen of the air combined with the limestones which form gigantic cliffs all along the reaches of the river where the dams will be located.

The manufacture of nitrates from atmos-

pheric nitrogen has been begun in Europe and to a smaller extent, in America and has proven tremendously profitable as well as thoroughly practical. Its only requirements are vast supplies of cheap power and limestone and this combination seems realized along the Colorado as at no other point in the world.

As is well known to all familiar with the mineralogy of Arizona, there are great ore deposits in many places in the State which await only the advent of power to become profitable. These as well as the mines already in operation will be vastly benefited by the completion of even the first unit of the proposed plants.

EPSOMITE DEPOSITS ATTRACT ATTENTION—AVAILABLE REPORTS

An increasing interest in deposits of epsomite has been evidenced in recent months. Several new deposits have been reported and investigations are being made as to the possibility of working some of those which have been known for some time.

There is no single report published by the Survey on the subject of magnesium sulphate but there are several references to such deposits. Bulletin 364 contains a brief note concerning a deposit of epsomite in several small lake basins, 3 miles north of Wilcox Station on the Union Pacific R. R. in Wyoming. The largest of these, known as Brooklyn Lake, has an area of 90 acres and is covered with a deposit of nearly pure epsom salts.

Bulletin 5 of the Texas University Mineral Survey contains a similar note concerning a deposit of epsomite in Brown County, Texas, with an analysis showing it to contain 76 per cent magnesium sulphate, and also a statement that it occurs in large quantities.

Some time ago specimens of epsomite were sent to the United States Geological Survey from M. J. Anderson, of Manti, Utah, and Dr. G. B. Loring, of Richfield, Utah, in both cases said to represent deposits of considerable magnitude.

NEW YORK NEW MINING CAPITAL

War Tax Drives British Companies to Move Their Headquarters

The new British budget, which provides for a supertax of 50 per cent on the profits of all British companies already has caused the removal to the United States of the headquarters of several companies representing South and Central American gold mines. Mining men in London assert that unless the tax is reduced this movement will become so great that New York instead of London, will become the mining capital of the world.

The tendency to bring headquarters to the United States is becoming so pronounced that mining interests in England are bringing pressure to bear on the chancellor of the exchequer to have the supertax modified in favor of gold mines.

MARKED DEVELOPMENT TAKES PLACE AT MARYSVALE, UTAH

Alunite deposits near Marysvale, Utah, have increased greatly in importance since the publication of the Geological Survey Bulletin No. 511 in 1911, the last publication referring to them.

Twice as much material has been exposed and the extent of the deposits has been proven to be very much greater than was thought to be the case previously.

In order to bring this development up to date, G. F. Loughlin is preparing a new report upon these deposits.

The use of alunite is still considered to be in an experimental stage. The Mineral Products Co., of Chicago, however, has erected a large plant at Marysvale, and has started work. They probably are recovering potassium sulphate, without attempting to get any by-product of aluminum.

The report describes the deposits and discusses the possible utilization of the mineral, and reviews the geology of the region.

GALE GOES TO MARYSVALE TO REPORT ON ALUNITE

As a part of the examinations in connection with the search for potash, the U. S. Geological Survey for a number of years has examined nearly all important deposits of alunite in different regions of the United States.

The most important of these deposits have been discussed in the Survey reports. The alunite deposits near Marysvale and Beaver, Utah, which were described several years ago by the Survey, are now undergoing reexamination by H. S. Gale for the Survey, in order that results of deeper exploration of the veins may be communicated to the public.

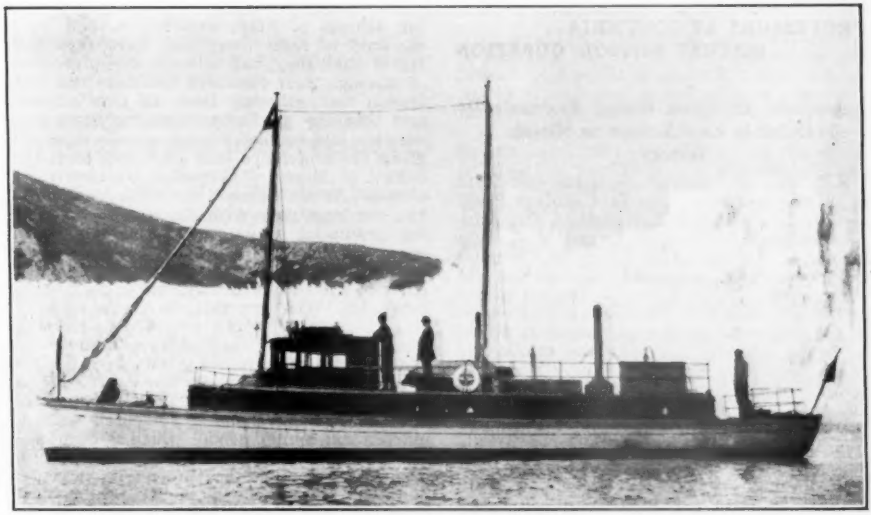
The work of the Survey aims, so far as is practicable, to inform the public as to the amounts of alunite available in the country, as well as to acquaint them with the geology of the deposits and to advise wherever processes are developed by which potash and other products can be extracted successfully on a commercial scale.

It is expected that a more comprehensive report upon the Utah alunite deposits will be published by the Survey at an early date.

GEOLOGISTS REPORT ON COTTONWOOD AMERICAN FORK DISTRICT

B. S. Butler and G. F. Loughlin are coauthors of a report on the Cottonwood-American Fork mining region in the Wasatch Mountains of Utah.

This report describes the stratigraphy, structure and ore deposits of the region and makes a brief comparison between the ore bodies of this region with those of the adjoining Park City District.



LAUNCH TAHN

Owned by the government and used by the Geological Survey party which investigated Alaskan water resources this summer

TEST POWER POSSIBILITIES OF ALASKAN STREAMS

The United States Geological Survey, in cooperation with the United States Forest Service, is carrying on an investigation of the water resources of southeastern Alaska, in order to determine power possibilities for use in connection with the development of the mining and timber industry in this section.

Eight gauging stations, equipped with automatic gauges, have been installed, so that continuous records will be obtained. The low-water period in this section occurs during the winter months and special measurements will be made to determine the flow during the coming winter.

The gauging stations are located near the coast and are reached by boat, which is the principal means of transportation in southeastern Alaska, as but few roads and trails have been built.

The headquarters for the work are at Ketchikan. The Geological Survey is represented in the field by George H. Canfield, assistant engineer, and the Forest Service by W. G. Weigle, forest supervisor.

Compliments Platinum Report

In its issue of August 21, the *Mining Journal*, of London, comments complimentarily on J. M. Hill's platinum report made for the Geological Survey.

BARYTES INDUSTRY BOOMS IN U. S. WITH EUROPE CUT OFF

Due to the stopping of importation of crude barytes and all barytes chemicals from Germany, the barytes industry in this country is looking up decidedly. In addition there has been a great expansion in the barytes chemical industry of this country. Production is being stimulated in an unprecedented manner. This is especially true in Kentucky and Tennessee, where the deposits have not been actively worked during the last few years.

The most important use of barytes is in the manufacture of paints. All manufacturers on the eastern seaboard were using German and English barytes before the war.

The crude barytes were laid down at eastern ports for $6 per ton. All use of American barytes was barred by the fact that the lowest freight rate from American deposits was $4.40 per ton. From the Tennessee and Kentucky deposits the freight alone was $6 per ton.

One of the peculiar features in regard to the use of American barytes in the East is the fact that the Missouri deposits enjoy a much lower rate than do the Kentucky and Tennessee deposits. The average haul from the Missouri mines is 1,200 miles, whereas the Tennessee average is 800 miles.

A large number of firms engaged in handling barytes have embarked in the business since the opening of eastern ports.

PROFESSORS AT COLUMBIA DISCUSS SCHOOL QUESTION

Improperly Equipped Mining Engineers Declared to be a Menace to Mining Industry

Following the line of discussion set forth in a communication from Prof. Robert Peele, published in the September issue of THE MINING CONGRESS JOURNAL, other members of the faculty of the School of Mines of Columbia University have expressed opinions on the same subject. Prof. Henry S. Munroe says:

"I think that there can be no question as to the idea that our mining engineers would be better trained and that the mining industry would be better served by a smaller number of mining schools well equipped for the work. A half-trained mining engineer is likely to do much mischief, and the completion of his training, at the expense of his clients, is likely to be very expensive!

"A mining school should cover a wide range of subjects, and in a small school the professors will have to cover too much ground, teach too many different things to do their work well. It is difficult, if not impossible, to get experts to accept a chair in such a school at any salary.

"A small school is apt to be greatly affected by its environment, and to lose breadth of teaching, especially if located in a mining region, and with its students familiar with the practice of that region and willing to listen to no other. Such a school quickly becomes narrow and provincial.

"A larger institution, especially if connected with a university, and with other professional schools, draws its students and faculty from many places, and the atmosphere is more favorable to breadth of teaching. Students from many different mining regions compare notes, and the whole body becomes receptive. The presence of professors with wide and varied experience in many lines of engineering is most stimulating. Such an institution attracts the best men in each profession as teachers, and the most ambitious students from all parts of the country.

"In a large institution, especially in a university, research work is always in progress and graduate students give a tone to the student body and research professors leaven the faculty with their spirit, so that both study and teaching are insensibly lifted to a higher plane."

CLASSED AS EDUCATIONAL EVIL

Prof. Edward F. Kern says:

"I am very glad that the question of the disadvantage of the large number of mining schools has finally received the attention of editors and other influential persons, who can help to right one of our educational evils. During the past ten years I have come in contact with a number of graduates of mining schools of State universities, and in a majority of cases these men have expressed regret that they had selected the profession of mining; their comment was that this profession was suffering from an over supply, and that the graduates from the State universities and smaller mining schools were not given the preference that graduates from the School of Mines of Columbia University received. As the demand for mining engineers has not kept pace with the number of mining graduates which are turned out each year, and the relative demand is growing less each succeeding year, the chances of the graduates of the smaller universities grow less encouraging. The fact that the smaller universities are not sufficiently equipped to carry on the work of proper instruction in mining, and also that the instruction is given by only one or two instructors, is an argument strongly in favor of the mining scohol which is connected with a large university as compared with an independent mining school which is connected with a comparatively small State university. In mining, as in any other profession, it is the man who has received the best and most thorough instruction and training who is given preference and who is more sure of gaining success. A comparative study of the records of mining graduates shows that the majority of successful mining engineers are those who have been trained in the larger universities."

FILL CERTAIN DEMAND

Prof. William Campbell says:

"I take it that by mining schools is meant institutions teaching both mining and metallurgy. In regard to the latter subject there can be no doubt as to the great advantage of the larger schools, especially in respect to the teaching what may be called the new metallurgy based on physical chemistry and metallography in its broadest sense.

"It seems to me, however, that some consideration ought to be given to the smaller schools as filling a certain demand. Could you not lay stress on the two types of schools found in Germany, the Bergschule and the Bergakademie (and Royal Colleges of Technology) and their particular fields?"

SEEK BIG SCHOOLS' DEGREES

Prof. Arthur L. Walker says:

"I am firmly convinced that the large number of small mining schools attached to the various State universities is detrimental to the mining industry. It is impossible for these schools with limited facilities to give the students the advantages that the recognized mining schools offer. This is especially the case in regard to instruction in the fundamental engineering subjects.

"That these cannot compete with our leading mining schools is proven by the fact that so many students after graduating from the State universities come to the mining schools connected with large universities for

additional instruction. Students also recognize the great advantage in having a degree from the larger institution."

FIRST-AID WORKERS AN ASSET WHICH NATION HAS OVERLOOKED

Bureau of Mines Work Has New Value in Light of General Trend Toward Preparedness

An asset of the Bureau of Mines and of the United States as a nation has been overlooked.

The training of thousands of miners in first-aid service makes possible a reserve for hospital service in time of war which is certain to be most efficient.

No less than 50,000 trained men are available at this time for such a reserve. Large numbers of these men can do as efficient work as a surgeon, so far as concerns first aid to the wounded.

This number is increasing rapidly under the instruction of the men of the Bureau of Mines who are going continually from one mine to another engaged in this work. Many of the mining companies also are carrying on systematic training of their men for first-aid service.

The experts of the Bureau of Mines present splendid material for officers of such a corps if the United States should need their services.

Formerly when an accident occurred in a mine, the injured were hurried to the surface as quickly as possible with little attention to the injury under ground. This resulted in needless deaths. There are cases on record where a fractured limb resulted in death due to loss of blood caused by unnecessary moving of the victim in an effort to get him to the surface, which resulted in the severing of an artery by the broken bone.

All of this is changed in present practice. An injured man is given first-aid treatment on the spot. Some one, or perhaps several, of his fellow workmen, have been given special instruction as to just how to act. Broken bones are carefully arranged so as to cause a minimum amount of suffering, and then are strapped in plints. The victim is made as comfortable as possible, and then is taken out of the mine in a careful manner, after all possible aid has been given him that is available within the mine.

Literally thousands of lives are being saved in this way every year.

The effectiveness of the service is becoming so apparent that it is growing with leaps and bounds, and within the next few years there will be hundreds of thousands of miners in the United States who will have a good practical knowledge of rendering first aid. They will be skilled to a certain degree in the reduction of fractures, the curtailment of serious loss of blood and the treatment of internal injury.

To be able to throw such an effective corps of men into the field in case of a sudden outbreak of hostillities in which the United States is engaged, is an asset whose value cannot be calculated.

If the use of asphyxiating gas becomes a fixture in warfare, the Bureau of Mines will be able to furnish a well-equipped helmet corps. The helmet men they have trained throughout the country would be able to give very effective service in case exposure to gas becomes necessary.

COMPLETE SETS OF PUBLICATIONS OF U. S. GEOLOGICAL SURVEY RARE

It requires twenty-seven regular sectional bookcases to hold the matter which has been published by the Geological Survey since its foundation thirty-six years ago.

In addition, one large map case is required to hold the folios which have been issued. Over 2,200 topographic maps have been issued, which fill two sections of a standard map case.

To date the Survey has published 622 bulletins, 375 water supply papers, 54 monographs, 96 professional papers, 200 folios, 5 special publications, annual volumes covering mineral resources investigations, annual reports by the director, instructions to topographers, field methods for survey geologists, and various other publications for circulation within the bureau.

The special publications mentioned are all on Alaska. The monographs are highly technical papers and have a limited circulation. The mineral resources have been published annually since 1882. A portion of the time these have been printed in two volumes. These reports were published annually with the exception of the years 1883-84 and 1889-90, which were combined.

While a large number of complete sets of the publications of the Geological Survey are in existence, none is for sale so far as is known. Offers as high as $1,400 have been made for the entire set, including a complete set of the topographic maps.

RADIUM BULLETINS SOON WILL BE READY FOR DISTRIBUTION

The Bureau of Mines' radium bulletin describing the new process for extracting radium and telling of the operations of the plant is in the hands of the printer. It will be ready for distribution within the next few days.

The mining, concentration and milling of carnotite ore is the subject of a Bureau of Mines bulletin which will appear within the next two months. This bulletin has been delayed in order to incorporate concentration costs which could not be arrived at accurately until after the installation of the mechanical appliances now being put in place.

AN ADVERTISER IN TRADE PAPERS RELATES EXPERIENCES

Warren Aikens, writing in the *Mining World* of October 16, has the following to say in regard to advertising in trade papers:

As a manager scans the list of expense items which make up his burden, woefully few of them can be touched at all. But, ah! There is the trade journal advertising! That can be dispensed with for a time, or at least greatly lessened. Economy urges that something be done. The harassed judgment is persuaded to "try for a while" what eliminating this expense will do. So the blue pencil goes through that item. Consequences follow like a swarm of locusts.

"What," writes the western sales manager, "has become of our ad. in the . . . ? You know my men are pushing that line now, and we need to keep it before the superintendents and owners of plants in this part of the country. I know we have to economize just at present; but, for heaven's sake, don't let a few dollars' worth of advertising stand in the way of our campaign here."

Another mail brings the weekly report from MacDonald, manager of the southern office, with an enclosure on which he has written, "Note." It says: "I am sorry, old man, that your company was overlooked in sending out the specifications; but the fact is, I instructed my secretary to write to all of the concerns listed in the . . . , supposing, of course, that your name was there with the rest, as usual, and when no reply was received from you I thought it was because you didn't care to bid. Aren't you advertising now?"

"What's your idea," explodes Collins, head of the construction department, as he bounces into the manager's presence, "in stopping our ad. in the . . . ? They got a wire in Thursday saying that the Ridgeland plant had burned, and turned it over to Snavely, of the Robely Company. I only just learned of the fire by reading this week's issue of the paper, and, when I called up the editor to ask why he didn't put us next, as ordinarily, when he got the news, he said they naturally had to give preference to their advertisers. There's a $300,000 contract gone, to a certainty, and I know we could have got it if we had been on the ground as soon as the Robely people. As it is, they've undoubtedly got the plans in for a new mill, and the specifications so drawn that we can't bid at a profit."

From Collins the manager turns again to his mail. "Enclosed find sketch and preliminary estimates on a plant which the Cia. de Rio Estrella is going to put up at Entresna," begins a letter from Blackford, agent of the company at a South American capital. "Please cable lowest figure at which we can take the job. I'm afraid it's too late, but with a favorable price we may be able to get in. The director of the Cia., Jose Silvera, received a copy of the *World's* Export Number, and on looking through it he saw an advertisement of Farmer & Son, with the address of their agent at Para, so he wrote there, not thinking of us in this connection until yesterday, when I happened to meet him at the club. Roddies went up the river from Para on a specially chartered launch when he got Silvera's letter, and has practically acted as their engineer in designing the new works at Entresna; therefore, our only show is in a low price. You know Entresna is way back near the mountains and Silvera seldom comes here, so I had no opportunity to know what was going on. I thought you carried an ad. in the *World*. Why don't you?"

So the reproaches from salesmen multiply. While most of these bear prima facie evidence of being justifiable subjects for complaint, the manager begins to feel that some of the men are putting them forward as excuses to cover actual neglect of duty. Yet the uncertainty prevents reprimand, and the result is more or less demoralizing.

Blanchard, when rebuked for losing the Mayville contract, comes back with the statement that the superintendent saw a new attachment for these machines advertised by the Weber Company and had "overlooked our previous announcement on the same subject," not having been interested in it at the time. Consequently, the Weber people had the first chance and made the most of it.

Moreover, the retrenchments recently entered upon have caused considerable talk, and competitors are pointing to the withdrawal of the company's advertising as an indication of financial embarrassment, warning customers against placing contracts for any time ahead with a concern liable to become insolvent and leave them in the lurch, with machinery urgently needed to complete projected improvements or additions still unbuilt. The manager knows of one very large order lost through that report before the company learned of the circumstances and could reassure the purchaser's mind.

Such, in brief, is the history of many an attempt to "cut out" advertising. The details will vary according to circumstances, but the facts in such cases are essentially the same. That the trade and technical journal has become an important—yes, an essential—factor in our modern industrial world is incontrovertible. The author is not, and never has been, connected with a trade journal, but writes from the standpoint of the advertiser.

BRASS USED EXTENSIVELY IN SHELLS AND CARTRIDGES

One and one-fourth pounds of brass is used in the time fuse mechanism of a 3-inch shrapnel shell. The cartridge case contains 2¼ pounds of brass. Shells for rifles, which also are used in machine guns, contain 200 grains of brass. Other shells and cartridges contain similar amounts of brass in proportion to their size.

This information was obtained recently at the War Department.

PERMISSIBLE EXPLOSIVES REDUCE FATALITY RATE FROM 3.39 TO 0.96

This Decided Betterment, Figured on a Basis of Each 10,000 Men Employed in Bituminous Mines, Has Been Made Since 1903 and Is Due Largely to New Quick-Flame Powders

How the use of low temperature, quick flame explosives has been largely instrumental in decidedly reducing the fatality rate in bituminous coal mines was explained by Van H. Manning to the mining section of the National Council for Industrial Safety, which met at Philadelphia, October 20. In his address Mr. Manning said:

The principal result of the work of the Bureau of Mines since its organization has been in the development of the movement for greater safety and better health conditions in the mining, metallurgical, and allied industries of the United States. It has been able to work out cooperative agreements with many of the State agencies having to do with the reduction of accidents, and has received the hearty support of the mining companies throughout the United States in all of its efforts to reduce the hazards of this great industry. In conducting its campaign for the increase of safety in the mining industries, the following general plan of cooperation between the national government and other large agencies has been adopted: (1) That the national government conduct the necessary general inquiries and investigations in relation to mine safety, and disseminate, in such a manner as may prove most effective, the information thus obtained and the conclusions reached; (2) that each State enact needed legislation and make ample provision for the proper inspection of mining operations within its borders; (3) that the mine owners introduce improvements with a view to increasing safety as rapidly as the practicability of such improvements is demonstrated; and (4) that the miners and mine managers cooperate in drafting and enforcing safety rules, regulations and laws. The States, miners, mine owners and other agencies, such as mining and engineering societies, are now showing a commendable willingness to cooperate with the national government in this safety work.

COOPERATION NECESSARY

The Bureau of Mines is only one of several agencies working to accomplish a great end, and its activities can be most beneficial only in those cases wherein it is cooperating with individuals and organizations who have an interest in the matter of safety.

Among the principal investigations conducted by the Bureau tending toward the reduction of coal mine accidents are those relating to gas and dust explosions, the use of explosives and electricity and a study of safety lamps. It has also done much work in the development of mine-rescue and first aid apparatus, and has conducted a campaign of education whereby these appliances may be used most effectively. Thousands of miners are now able to administer first aid to their injured fellow workmen. Suffering is reduced and many lives saved.

When Congress first authorized the investigation of the causes of mine explosions, it was not generally believed that coal dust alone could spread an explosion throughout a mine. Now that the explosibility of coal dust has been demonstrated by the Bureau through work in the laboratory, in the field, and in its experimental mine, the Bureau's efforts are being directed toward the devising of effective and practical methods of preventing or arresting explosions. Through the development and use of rock-dust barriers and other devices, the intensity of future coal mine explosions most certainly will be decreased.

PERMISSIBLE EXPLOSIONS

A systematic investigation has been made of the possibility of coal mine explosions starting from improper use of explosives or using improper explosives, or from electric sparks, miners' lamps, mine fires or other agencies. Various tentative conclusions and proposed recommendations regarding proper precautions are now being tested on a practical scale in the experimental mine near Pittsburgh.

The Bureau has carried on a number of investigations as to the nature of explosives used in mining operations, with a view to changing the character of explosives so as to meet the needs of the various branches of mining, and especially to increasing safety in coal mines. Both the wrong use of explosives and the use of an explosive not suitable for certain classes of work have resulted in coal mine disasters. The Bureau has brought about what is little short of a revolution through the introduction of new types of low temperature, quick-flame powders, designated as "permissible explosives," in the more dangerous coal mines of the country.

FATALITIES FALL OFF

In the bituminous coal mines of the United States, the fatality rate from explosives, per

10,000 men employed, has been reduced from 3.39 in 1903, to 0.96 in 1914, largely as a result of the use of permissible explosives.

The investigation of explosives is also important to metal miners, whose health and efficiency are affected seriously by the use of explosives.

Through the activity of the Bureau in calling attention to dangers in the use of electrical machinery in mines, manufacturers have devised safer types of apparatus, and States have enacted stricter laws governing electric installations. An investigation of electric lamps for miners has resulted in greatly improving the types now offered for sale.

OTHER SAFETY LAMPS

In regard to safety lamps other than electric, tests have been made to ascertain the comparative merits of different types of safety lamps, including their usefulness in furnishing light to miners, their relative safety, and their value in indicating the presence of explosive gas.

In considering the Bureau of Mines as a factor in mine safety, it must be remembered that the greatest good can only be accomplished where there exists a spirit of cooperation, and a willingness on the part of all agencies, State, Federal and individual, to assist each other.

McCASKEY EXPLAINS GROUPING OF RELATED METALS IN REPORTS

In his introduction to the general reports on gold, silver, copper, lead and zinc, H. D. McCaskey, head of the mineral resources division of the Geological Survey, says in part:

In the mining industry five metals are closely related in both the genesis and the geologic occurrence of their ores; they also hold together in mining and in metallurgical treatment. They are gold, silver, copper, lead and zinc. Of their ores, some contain all five metals, many contain three or four, and few contain only one. Gold and silver, for instance, on the one hand, and lead and zinc, on the other, almost always stand in close genetic relations, and the ores of each two are usually mined together. Copper ores almost invariably produce some silver and gold as well as copper, and lead ores, with certain exceptions, produce notable supplies of silver. Zinc ores in the western States contribute also to the silver production. In the same mine sometimes, and in the same mining district frequently, all five metals occur in commercial quantity.

This situation is recognized by the United States Geological Survey in its publication of the annual reports on the mineral resources of the country; hence the general treatment of each of the five metals in the general reports and the grouping together of the related metals in the various mines reports descriptive of individual or geographically grouped States.

To facilitate advance publication the complete report upon these five metals is therefore divided into sixteen sections, each of which is published separately. The first four sections give figures of output for the calendar year in marketable form for the metals named as obtained from the smelters, refineries and mints, and general reviews of the respective industries for the entire country; the last twelve sections give the production as obtained from the mines so far as possible in terms of recoverable metal in ores and other material sold or treated during the calendar year, and supply information in detail relative to the mining industry in the respective States, counties and mining districts. The figures given in the general reports are the final official statistics of production for the country and of the States. The general report on gold and silver includes the statistics of recovered precious metals as determined jointly by the Bureau of the Mint and the United States Geological Survey.

In measurement of ores, concentrates and similar material the short ton of 2,000 pounds is used throughout. The ore classification is necessarily arbitrary in part. An ore is generally understood to be worked at a profit for one or more metals. The complex nature of western ores, especially, and the gradations from one well-recognized class to another render essential some fixed measures for the terminology used. The dry or siliceous ores comprise gold and silver ores proper, as well as fluxing ores carrying considerable quantities of iron and manganese oxides and very small quantities of gold and silver, and also precious metal bearing ores carrying copper, lead or zinc in quantities too low to classify them as copper, lead, zinc or mixed ores. The copper ores include those carrying over 2½ per cent of copper, or even less in the cases of the great disseminated copper deposits of the West and of the copper ores of the Lake Superior region. In general, the lead ores are those containing over 4½ per cent of lead, and the zinc ores are those containing 25 per cent or more of zinc, both irrespective of their precious metal content; but some ores of lower grade in lead and especially in zinc, are treated profitably for these metals, and of course they are then classified as lead or zinc ores, as the case may be. The mixed ores are combinations of the ones enumerated.

The price per unit of metal production (gold excepted, which is fixed by law at $20.67+ per fine ounce) is based upon averages of daily market prices current at New York for silver, copper and lead, and at St. Louis for metallic zinc or spelter.

Molybdenum Bulletin Nearly Ready.

A Bureau of Mines bulletin on molybdenum has been completed and is in the hands of the printer.

Mineral Land Decisions

Further consideration has been denied in the case of the Northern Improvement Co., which filed a motion for rehearing of the departmental decision holding for cancellation the group of coal claims known as the Chezum Coal Claims, near Juneau, Alaska.

In the decision complained of the finding in part was:

"The record discloses that between fifty and sixty excavations have been made on the group, most of them showing coal, but this work appears to consist of merely surface openings generally of small dimensions and to have been performed for proofing purposes, with a view to ascertaining the number and continuity of coal seams and the nature of the coal exposed.

"It does not appear that the original claimants made any attempt or intended to use these excavations for the commercial production of coal.

"It appears in the case here under consideration that none of the excavations shown to have been made upon this group, can be called with propriety, a mine of coal. This being true, none of the claims is entitled to entry or patent."

No legislation has been enacted which changes the requirement that persons should have "opened or improved a coal mine or coal mines."

The Department holds that it cannot vary the law to meet the necessity or convenience of persons. Congress has required the opening and improvement of a mine.

A mine, according to competent authority, is "an excavation in the earth made for the purpose of getting metals, ores or coal." No occurrence of ore is designated as a mine unless something has been done to develop it by actual mining operations.

The department holds that its decisions have been harmonious with this definition.

In addition, the regulations of April 12, 1907, providing that "a perfunctory compliance with the law in this respect will not suffice, but a mine or mines of coal must be opened and improved in fact upon the land claimed."

In this case there was no mine equipment or facilities to extract and bring to the surface commercial quantities of coal for disposal to the public. Until that is done it cannot be said that a coal prospect is a coal mine.

For these reasons the Secretary of the Interior denies the motion for a rehearing.

Mining Company Loses

An appeal from the judgment of the Commissioner of the General Land Office by the Chignik Coal Mining Co., has resulted in an adverse decision by the Secretary of the Interior for the mining company.

The Commissioner ruled adversely on an application by the mining company to purchase a group of four claims, each embracing 160 acres, situated in the Juneau Land District of Alaska. The properties are known as the North Pole, Equator, Baby Ruth and Volunteer.

These claims are said to have been located in July, 1915, by John Monson, Charles Sivertsen, Frank Murphy and S. F. Strand. The notice of location of each of the claims contains the following recital:

"It is the intention of the undersigned to improve, mine, work and develop the said coal lands hereby claimed, and to enter them in the U. S. Land Office for Alaska, according to the Act of Congress, where all coal lands in Alaska can be entered."

On August 11, 1907, an attorney for the locaters executed a quit claim deed purporting to convey the claims to Henry S. Tibbey, who by quit claim deed, dated December 11, 1908, purported to convey the ground to the applicant company.

The application to purchase was filed April 8, 1909, and told of an expenditure of $2,500 in the opening and improving of a mine of coal on the land, together with other expenditures in connection therewith which totalled $6,800. The mine is described as having two tunnels aggregating 160 feet in length.

The application was rejected by the Commissioner primarily on the ground that the notices of location were not filed in the local office within a year from the date of the locations as required by law.

A modification of the President's withdrawal of Alaskan coal lands says: "Nothing in any withdrawal of lands from coal entry heretofore made, shall impair any right acquired in good faith under the coal land laws and existent at the time of such withdrawal."

The order of withdrawal thus modified saved and excepted from its operations all Alaskan coal claims that were valid and subsisting at the time of the order, and left it in full force and effect as to all coal lands not then included within perfected locations.

The notices of location of the four claims involved in this case do not conform even in substance to the requirements of various instructions in the matter of disclosing what,

if any, work constituting the opening or improving of a mine, had been performed on the claim at the date of the purported locations.

The application to purchase, while reciting the opening or improving of a mine on the land covered thereby, contains nothing upon which the date of the initiation of such work can be determined or which tends in any degree to establish the evidence of a valid location or claim to any portion of the area at the time of the withdrawal of 1906.

On account of the failure of the company to show that at the time of the withdrawal of 1906 a valid claim or claims existed as to any portion of the land, and aside from any other objection raised by the Commissioner, the application to purchase must be rejected, the Secretary of the Interior rules.

Coal Decision Modified

A modification of the decision of the Commissioner of the General Land Office, with regard to certain lands in New Mexico containing coal deposits, has been announced by the Secretary of the Interior.

George A. Keppers, Jr., on May 12, 1911, filed a coal declaratory statement for certain land in the Santa Fe district of New Mexico. He presented therefor an application to purchase.

Later others filed in the local land office a protest against the application, asserting generally that the land was non-coal in character and that they had established residences thereon.

On the same date the State of New Mexico filed a protest against the applications, asserting the claim of the State under the Act granting to New Mexico certain sections of land for the support of common schools.

Still later a protest was filed against the application by the field service of the General Land Office.

A hearing was had on these several protests and from the testimony adduced the local office ruled that the land contained workable deposits of coal and was known to be coal in character prior to June 21, 1898, at the time of the granting act.

The particular lands in question are held to have passed to the Territory of New Mexico at the date of the grant and this presumption can be overcome only by the submission of certain proof that the land was known to be coal in character at that time.

A variety of testimony taken in this case goes into detail as to the amount of coal existing in this part of New Mexico and as to whether it is workable.

Some exploration with a drill was made and while conclusions therefrom were somewhat indefinite, they strengthen the belief that the coal was not workable and that on June 21, 1908, the land did not possess any value on account of its coal content.

It is true that coal miners and coal operators living in the vicinity of the land prior to the time of the grant, gave it as their opinion that the land was known to be coal in character. But aside from the openings and exposures, which are of little importance, they based their opinion on the fact that the country was underlaid by red sandstone and inferred it to be in the horizon of the lower coal group of the Mesa Verde formation and therefore should be underlaid by the Otero and Talbot beds. They admit, however, that further exploration would be necessary to demonstrate the presence of these beds on the lands.

The general practice of the U. S. Geological Survey in classifying coal lands has been to give a split bed the value of an unbroken bed with which it can be compared favorably.

It is evident that a solid, 3-foot bed is worth more than two 18-inch benches separated by 6 inches of clay or shale.

After careful study the Survey adopted the simple expedient of prescribing that any parting or bench of bone or impure coal included in a bed injures the value of the coal of the bed in amount equal to the thickness of the parting.

Thus the split bed, which exists on the property under consideration, with its 6-inch parting, is regarded as equal to a solid bed 30 inches thick. (Thirty-six inches of coal minus 6 inches of parting, equals 30 inches.) If the benches on either side of the parting are not of the general thickness, the thickness of the parting is deducted from the thickness of the thinner bench. It is not necessary to consider the whole thickness of a coal bed.

It is the practice of the Survey to start with the base bench, if not itself a workable thickness, and to add the thickness of the next bench above or below, after deducting the thickness of the intermediate parting. If the whole bed thus included is still not of workable thickness, and more benches exist above or below, the thickness of these benches is added, after subtracting the thickness of the parting between them and the principal bench. If the parting is thicker than the then adjoining coal bench, that bench is considered as having no value.

By applying this rule it is evident that there is no longer question as to the value of the coal on one of the properties involved in this case.

As a consequence the decision of the Commissioner is upheld on the one property and reversed as to the other property in question.

Consider Holmes Memorial

A committee has been named by the Director of the Bureau of Mines to cooperate with the other offices of the Bureau in the matter of providing a suitable memorial to the late Dr. J. A. Holmes. The committee consists of Dr. C. L. Parsons, George L. Pope, Judge J. W. Thompson, C. A. Davis and F. J. Bailey.

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EDITORIALS

MINE MANUFACTURING AS AN INVESTMENT

The American Mining Congress seeks to serve all who are interested in mining. It is peculiarly interested in those who have invested in unfortunate enterprises, as well as in those who have invested unfortunately in alleged mining enterprises, designed to mine dollars from pockets instead of mineral values from the ground. Its interest in these is partly because of the injustice which has been done them and partly because the injustice thus practiced has given the mining business a bad name and has closed the door through which other funds might have come for the development of legitimate enterprises.

RECOMMENDED LEGISLATION

Many years ago an American Mining Congress committee on mining frauds under the chairmanship of George C. Pardee, then Governor of California, recommended for enactment by the several States a law making misrepresenation of any facts concerning any mining property which was the subject of negotiation, a misdemeanor. This law, with modifications, was enacted by some fourteen States, but no systematic effort has been made to enforce it. This work was under way when the first Washington campaign for the creation of a bureau of mines was undertaken. This later campaign so engrossed the possible activities of the Congress that the work of providing protection to mining investors practically was abandoned. It is true that committees were appointed thereafter, but without any practical results. There may be less need now than in former days to seek protection for the mining investor because so few investments of this kind are being made, but this fact emphasizes the need of the counterpart of this work; *i.e.*, the stimulation of investment in prospective metal mining enterprises.

The official call for the Philadelphia Convention of the American Mining Congress made special reference to the need of developing more prospects into mines in order that, when the present profitable mining areas are exhausted, other ore bodies might be ready to utilize the capital, professional skill and labor now so employed. Attention was called to the fact that plenty of capital is available to take over well-developed mines but practically none is to be had for the development of new mines.

THE LAW OF AVERAGES

The manufacture of a measured and tested ore body into metal is an absolutely safe occupation, while the development of any one prospect is a very hazardous undertaking. The insurance of one life is even more hazardous and yet life insurance by the law of averages is made perhaps more safe than any other business. All men eventually die and become a loss to the insurer, but all prospects are not failures and some of them develop into undertakings yielding enormous profits. The very few companies in the United States engaged in the business of developing prospects are finding the business exceedingly profitable. With these companies what might be termed the "promotion hazards" are entirely eliminated. Pools are formed, a skilled "mine hunter" is employed, op-

tions are taken upon a considerable number of promising prospects and development work is carried on. If in the judgment of the mine hunter, a prospect is not sufficiently promising to warrant further work, the option is surrendered and the property is turned back to the original holder.

QUESTION OF VALUES

The surrender of the option does not mean that the prospect may not make a mine, but only that the judgment of the "mine hunter" does not approve further work, under all the conditions, the option price possibly being the determining factor. The condition shown by development might indicate a value of $50,000 instead of the $100,000 called for by the option contract. Neither does it prove conclusively that further development work may not prove the higher valuation. However, the opinion of the party in charge does not approve further expenditures and the property is abandoned. Upon some other of the properties upon which options are taken, work is continued, ore bodies are developed sufficient to justify the taking up of the option, the property is purchased and equipped and production is commenced. Upon this going property a company is organized; a little less than control of the stock is offered for sale at a price justified by the ore bodies in sight, but sufficient to more than cover the cost of developing this successful venture, and the unsuccessful ventures which have been undertaken and abandoned. The syndicate having reimbursed its members for all expenditures, still retains a controlling interest in a valuable mine.

SAFE AS LIFE INSURANCE

The few companies which have pursued this general plan have made handsome profits. Cooperation and sufficiently wide operation to reach the average of hazard has made of mine development a business as safe as life insurance. It has demonstrated that the busness of mine manufacturing can be pursued successfully by carrying on the work of development upon a sufficient number of well-chosen prospects to reach the average. No field of operation offers more certain results and greater profits to the investor.

WHY THE SURVEY PUBLISHES GUIDE BOOKS

In connection with the publication of the guide books of the West by the Geological Survey the question often is asked, "Why was this work not done by private publishers?" The answer is easy. The Survey for thirty years has gone to the limit of its authority in trying to get private publishers to make use of the immense stores of valuable data that are in its files. Publishers generally have taken the ground that the chances for loss in such an undertaking greatly exceed the probabilities of profit and as a result could not be interested.

Director Smith, of the Geological Survey, has been very emphatic in his stand that the best of information does no good if confined to a filing case. He has devised every possible means of getting this valuable data to the public. He is known to the scientific world as one of the most ardent advocates of reducing scientific information to a state where it may be digested easily by the public in general. Much of the guide book work was conducted under his personal direction. When he was convinced that the publishers could not be interested in such a project he decided the good to be gained justified the publication of the books by the Government. He was loath to use any of the meager fund allowed his bureau for printing purposes but it was the only chance that he saw of giving the nation the advantage of a great deal of material that it had paid to collect. Consequently he books were ordered.

The demand for the guide books, despite the fact that they are sale publications, has surprised even those most hopeful for their success. Some of the editions already have been exhausted and rush orders had to be placed for more copies.

The resources of the West are laid before the traveler in such an attractive form that the books are welcomed as an

interesting diversion to break the monotony of the transcontinental trip. Instead of an uninformed survey of the passing country the passenger now sees a meaning in the view that passes before his eyes.

It will be noted that many of the best photographs that are used in the guide books have been furnished through the courtesy of publishers. No further proof is needed that the interests most affected have no thought that the Government is infringing on work that should be conducted by them.

The guide books are works of great merit. They will stand, doubtless, as well as the policy of plain writing that they represent, as a lasting memorial to the genius and discernment of the Director of the Geological Survey and his associates.

HOSTILE TO MINING FOR POLITICAL REASONS

When Senator Dickerson, of New Jersey, in 1825 ridiculed the idea of attempting to develop the West, he did not realize that his remarks would be held up, ninety years later to illustrate the lack of foresight on the part of a certain portion of Americans who lived in his generation.

Senator Dickerson's speech, which was the subject of a news item in the October issue of THE MINING CONGRESS JOURNAL, should be read by every member of the present Congress. It would be very likely to militate against cock-sureness.

Some members of Congress are constitutionally opposed to anything that is in the interest of the mining industry. They vote against any aid that is proposed for it. Some of them speak against well-thought-out measures providing for more adequate federal aid in the interest of one of the nation's greatest industries. That their remarks will rise to plague them or their memory in much shorter time than did those of Senator Dickerson is probable.

Much of the opposition to mining springs from an ulterior motive. In certain parts of the country all mining is regarded as reeking with swindle because some members of the community were gullible enough to buy mining stock from some smooth talker who told them it represented the means of attaining sudden wealth. They fail to notice that the lightning rod agent and the vendor of gold bricks also fattened in the same territory.

Nevertheless it is popular with some persons to denounce mining. Any man possessed of sufficient intelligence to be selected as a member of Congress is certain to know that mining is just as honest and important a business to the country as is farming. As a matter of fact there are three swindles in farming land for every one based on mining land. Instead of trying to make political capital of a wrongly held belief a Congressman should rather use his position and influence to rid his constituents of erroneous ideas.

Representatives of the American Mining Congress in Washington never lose an opportunity to attempt to convince such Congressmen of the unfairness of their attitude.

BUREAU OF MINES' MOTION PICTURES DOING GOOD

Motion pictures are being made to serve many purposes. They are being employed in almost all lines of industry to carry out their objects.

The Bureau of Mines has been surprised agreeably by the immense popularity of the Bureau's films which are being circulated in coal mining districts. It is the intention to stimulate the desire on the part of the miners to better their living conditions, to improve their health and to impress them with first-aid doctrines.

The instructive value of these films has exceeded all estimates. There is a demand for films entirely out of proportion to the Bureau's ability to supply. We are convinced that great good is being done by the display of these films in mining communities.

GEOLOGISTS REPORT ON UTAH MINING DISTRICT

In view of the recent stock booming based on the Cottonwood - American Fork mining region, in the Wasatch

Mountains of Utah, a report is being prepared by the Geological Survey, which will be of particular interest.

Many claims are being made for this district by persons with stock market connections, and it is possible that operators and investors, who are contemplating becoming interested in this district will want to know what the government geologists have to say of the Cottonwood-American Fork area.

STRUCTURES RISE HERE AS EUROPE TEARS DOWN

In contrast with the unparalleled destruction taking place in Europe two notable engineering projects just have been completed in the United States. One is the world's highest dam, the Arrowrock structure at Boise, Idaho. It is 351 feet high. It will permit the reclamation of a vast area.

The other project is that of the long arch over Hell Gate, near New York City. This arch is 977½ feet long and furnishes direct railroad connection with the city from the North.

EXPECTS TO SEE MORE COPPER TREATED BY FLOTATION

The most important metallurgical change introduced during the year was the installation of flotation plants in copper concentrating mills, in the opinion of B. S. Butler, of the U. S. Geological Survey. These have been most successfully employed, both in the cleaning of concentrates produced by the usual wet methods, and also in the treatment of certain of the mill products, in which the losses by the methods previously in use were heavy. The use of the flotation process in the treatment of copper ores will probably be largely increased in the next few years. The development of leaching processes, which has received much attention for some time, was actively carried on during the year by several companies and plants are now in process of construction that will employ this method both for the treatment of low-grade oxidized ores hitherto unavailable, and for the recovery of an additional amount of copper from the material treated by other processes and that has hitherto been discarded as tailings. For both these types of material the method seems destined to be of prime importance.

SECOND REQUEST GOES TO PLACER MINERS

A second request for information from the operators of placer mines in the United States just has been sent out by the Geological Survey.

Responses were had from 30 per cent of those to whom the first request was sent. Twenty per cent of the first requests were returned unclaimed. This leaves 50 per cent of the placer operators to be heard from.

J. M. Hill, who is in charge of this work for the Geological Survey, calls attention to the necessity of securing more heed to this request for information, as it is absolutely necessary to have it before the work in progress in the interest of the placer miners can go forward rapidly.

The large number of requests which were returned unclaimed is due to the fact that a considerable percentage of placer miners do not stay long in one place. This is particularly true in California and Arizona. There seems to be a general tendency for them to leave no forwarding address. Attention is called to the fact that it would be of considerable service to the Geological Survey if miners will file with postoffices their changes of address.

INTERESTING TECHNICAL PAPERS TO BE PUBLISHED SOON

Some of the papers in preparation at the Chemical Research laboratory of the Bureau of Mines are:

"The Use of Copper Oxide in Gas Analysis," by G. B. Oberfell and G. A. Burrell; "An Approved Apparatus for Fractioning Gas Mixtures," by G. A. Burrell; "Development of a Methane Indicator," by G. A. Burrell; "Fusibility of Coal Ash," by A. C. Fieldner, A. E. Hall and A. L. Field; "Coal Analyses for the Fiscal Year 1913-14," by A. C. Fieldner; "Momentary Heating of Inflammable Dusts," by H. C. Porter and G. B. Taylor; "Diffusion of Oxygen through Coal," by S. H. Katz; "Structure in Paleozoic and Bituminous Coals," by R. Thiessen.

These reports are in various stages of preparation. Many of them will not be ready for distribution for several months.

BUREAU OF MINES EMPLOYS TOTAL OF 447 PERSONS

A total of 447 persons is employed by the Bureau of Mines. They are divided as follows: In the Washington office, 105; in Pittsburgh, 175; in the field, 135. In addition there are by special agreement five persons on duty in Pittsburgh and twenty-seven in the field.

HEAD GEOGRAPHERS MAKE WESTERN INSPECTION TRIP

R. B. Marshall, chief geographer of the United States Geological Survey, accompanied by Frank Sutton, geographer of the Atlantic Division; W. H. Herron, geographer of the Central Division; Sledge Tatum, geographer of the Rocky Mountain Division; T. G. Gerdine, geographer of the Northwestern Division, and G. R. Davis, geographer of the Pacific Division, has been making a tour of inspection to Survey field parties in the West.

The first visit was made by Mr. Sutton and Mr. Herron to parties in the Cuyuna Iron range in Minnesota and on the White Rock quadrangle in North and South Dakota and Minnesota. They later joined Mr. Tatum at Denver for a visit to some of the field parties in the Rocky Mountain States. They then proceeded to Portland, Ore., where Mr. Gerdine joined them, and they inspected the detailed topographic surveys in progress in the Willamette Valley. From there they went to Sacramento, Cal., the headquarters of the Pacific Division, and were met by Mr. Marshall and Dr. Davis.

The party attended the American Mining Congress Convention and the Congress of the American Society of Engineers in San Francisco and visited field parties at work in the San Joaquin Valley, of California, and in the Yosemite National Park.

Messrs. Marshall and Gerdine later went to Idaho to inspect topographic mapping in that State, and Messrs. Davis, Sutton, Herron, and Tatum went to Pioche mining district, Nevada, where another field party is at work. The last visit to be made will be at Houston, Tex., where five large parties are engaged in making a detailed topographic map of Harris County.

OPPORTUNITY OFFERED FOR PROFIT IN TALC DEPOSITS

Talc, if white, abundant and convenient to mine and market, offers an opportunity for profit at this time.

It is used extensively in toilet powder, crayons and gas tips, but the bulk of the production is required by the manufacturers of paper and paint.

Miners having talc deposits should communicate with the nearest paper or paint factory. It is probable that the exchange of a lew letters will make clear whether the deposit can be marketed if it should prove of good quality.

Wenatchee Ships Wolframite

Wolframite ores are being shipped from the vicinity of Wenatchee, Wash. O. B. Brown is one of the active operators in this district, according to information reaching this office.

GEOLOGIST'S TIP FOLLOWED; OIL IS DISCOVERED

The value of structural contouring made by the U. S. Geological Survey in many of the fuel regions, under its investigations, is becoming more and more appreciated. Much attention is being given Survey mapping in or near probable oil localities.

It happens that the dome discovered by geologist Henry Hinds, in the Colchester quadrangles in Illinois, and recommended by him for wildcat testing, notwithstanding its remoteness from other oil discoveries and disregarding the presence of a single dry hole bored many years before in its near neighborhood, was followed by the discovery and development of the Plymouth oil field in western Illinois.

The revised contouring of the Plymouth oil field recently made by the Geological Survey of Illinois, in which the drilling records now available were utilized, shows the essential features of the dome and the apex of the latter to conform closely to the contour drawn by Mr. Hinds. His contour was drawn by no other criteria than the elevation and dips of the rocks in the exposures of the outcrops of the region.

It appears also that the domes and anticlines suggested as promising by Geologist Wallace Lee in the summer of 1914 in the Gillespie and Stanton quadrangles of the same State are being tested by drills with promises of good results.

These quadrangles lay within the interior of the Illinois coal fields, and were mapped mainly on account of the coal contents as a part of the cooperative work of the U. S. Geological Survey and the State Geological Survey, to which the preliminary report of the Illinois work was transmitted for publication and by which it has since been issued.

RUSSIAN PLATINUM EXPERT AT FRONT; NEWS UNAVAILABLE

Serious inconvenience is being felt by those interested in platinum in this country by the absence of Mr. de Hautpick from his regular duty of gathering platinum information in Russia.

Mr. de Hautpick is with the Russian Army in the Carpathians and there is little hope of his taking up his platinum work until after the war.

Mr. de Hautpick has been practically the only source of information as to the platinum industry in Russia. His work has been done very efficiently, and his figures are accepted by the U. S. Geological Survey.

C. B. Dutton, of the Bureau of Mines, has been detailed to work with Dr. Rittman in looking after the Bureau's interest in connection with the work with the Rittman process at the Irvine plant of the Aetna Chemical Company.

Recent Legal Decisions

The statute of Nevada regulating liens on mines and making it the duty of the court on the foreclosure of such liens to declare the rank of each lien and the class of such liens, and this means that in each particular suit for the foreclosure of mechanics' liens on mining property, the court in the judgment must declare the rank or the order of the liens; and if a party to a suit fails to exhibit his lien he waives his rights as to any priority and to have the rank of his claim determined and stated in the judgment.

Daly *vs.* Lahontan Mines Co. (Nevada), 151 Pacific, 514, p. 516, September, 1915.

A deed conveying the surface of certain mineral lands described, with a reservation to the grantor of minerals and the usual mining rights, and certain parts of a river and creek bank together with a "right to build railroads through such lands in order to reach other lands beyond and above" is not to be limited to the lands when owned by the grantor, as distinguished from those that he might afterwards acquire, where it appears that the grantor was engaged in acquiring mineral lands and in bodying them up so as to make profitable mining propositions, and in such case it will be presumed that the grantor reserved the rights described in the deed in his own interest and in that of his heirs and assigns and for the purposes of the occupation and projects in which he was then engaged; and it would appear to be equally advantageous to reserve the right to build railroads to reach lands to which the grantor never got title, as it might be impossible for him to utilize, either by mining or sale, his lands except in connection with the adjoining lands of others, and it is reasonable that the reservation was intended to cover such lands, as it was probable that the grantor or his heirs might be interested in having served by the railroad, in connection with his own, lands "above and beyond" the lands described; and it seems reasonable that the grantor intended the reservation to be as broad as the necessity, and if the necessity included other lands than those then owned by him, or those thereafter acquired by him, it should be held to extend to and cover such other lands.

Oak Leaf Coal Co., in re, 225 Federal, 126, p. 127, July, 1915.

Where a vendor of mineral lands and mining claims declares a forfeiture under the terms of the conveyance, he cannot thereafter sue and recover for an unpaid instalment of the purchase price.

Croup *vs.* Humboldt Quartz & Placer Mining Co. (Washington), 151 Pacific, 493; September, 1915.

The statute of Washington (Remington & Ballinger's Code, Sec. 226, subdivision 9), providing that summons may be served on a foreign corporation if it is doing business within the State, does not apply to a corporation organized in the State of Minnesota and conducting mining operations in Alaska, and is maintaining in Seattle in the State of Washington, a purchasing and forwarding agent on a salary, the corporation paying the office rent and expenses, and where such agent has purchased goods, wares and merchandise in the city of Seattle with directions that they be shipped to the defendant corporation at its place of business in Alaska, and where such agent is charged also with the duty of seeing that the goods ordered by the defendant corporation from eastern points or cities are transshipped at Seattle and forwarded to the place of business of the corporation in Alaska, and where such agent does not pay for any goods or disburse any moneys whatsoever, but where moneys are disbursed from the general office of the defendant corporation at places outside of the State of Washington, as in such case the corporation is not doing business within a State.

Johanson *vs.* Alaska Treadwell Gold Mining Co., 225 Federal, 270; April, 1915.

See Daly *vs.* Lahontan Mines Co. (Nevada), 151 Pacific, 514; September, 1915.

A mining location under the United States statutes, without discovery of minerals cannot be said to be totally invalid and of no effect, as the title by such location and possession is good as against every person contending against it, except the Government of the United States; and a transfer of such a location gives the transferee the right to proceed to prosecute work with a view of making a discovery of oil and such possession cannot be disturbed by strangers, and is good and the right to such possession is sufficient as a consideration for a lease.

Hullinger *vs.* Big Sespe Oil Co. (California), 151 Pacific, 369, p. 370; August, 1915.

Where all the men employed in a mine, including the boss driver and his assistant, are subordinate to the bank boss and subject to his orders and control; and where in case of a wreck of trip cars in a mine the bank boss ordered all persons within hearing to assist in cleaning up the wreck and getting the cars

running, and the boss driver being present thereupon ordered his assistant boss driver to aid in cleaning up the wreck, such assistant boss driver is then within the protection of the statute protecting employes against the negligence of an employer, though the particular service is foreign to his regular work.

Republic Iron & Steel Co. *vs.* Quinton (Alabama), 69 Southern, 604, p. 605; July, 1915.

Under the employers' liability act of Oregon (General Laws of Oregon, 1911, Chapter 3, Section 6), contributory negligence of an injured miner is not a bar to a recovery of damages by a miner for an injury resulting from the alleged negligence of the mine operator, but the measure of the loss occasioned by the injury is apportioned ratably between the parties according to their respective want of ordinary care.

Raiha *vs.* Coos Bay Coal & Fuel Co. (Oregon), 151 Pacific, 471, p. 472; September, 1915.

Where placer mining claims were located by a number of persons with the understanding that each of such locators would have an equal interest in all of the land so located, and where it was the intention and understanding of such locators that a corporation would be organized by them for the purpose of developing the claims and that to such company when organized the claims would be conveyed, the stock of the corporation distributed among such persons according to their respective interests in the land to be conveyed, and where such persons subsequently met, organized a corporation under the laws of the State, and subscribed stock in proportion to the amount and value of the land located by each, such locations are held to be valid as the locators under such circumstances located the claim solely for their own individual benefit, and not as mere agents for the benefit of some other persons or of some corporation in which they had no interest; and under their arrangement the corporation, to which it was proposed to transfer the claims, was to be one in which such locators were to be the sole stockholders and each the owner of the equal undivided part of the stock; and it is not a case of dummy locators, lending their names to persons or corporations for the purpose of permitting them to acquire lands.

McKitrick Oil Co., in re, Land Decisions, August 13, 1915.

DIRECTOR SMITH COMPLIMENTED BY WESTERN MINING PAPER

In the October 2 issue of *Mining and Scientific Press*, the following editorial appears:

"We take pleasure in publishing part of an address delivered recently before university students by Dr. George Otis Smith, the director of the Geological Survey. It will be found so interesting as to require no explanation for its publication in our pages, but we may confess that one reason for reproducing a large part of this notable utterance is to show our readers what kind of man is directing the scientific activities of the Geological Survey. It is a matter of congratulation that he should be a man of clear insight and wide sympathies, a scholar and a gentleman, as well as a clever geologist and an able executive."

FEW TRAFFIC COMPLAINTS FROM METAL MINING REGIONS

It is a matter of comment at the Interstate Commerce Commission that so few complaints are received from the mining districts. This is especially true of the metal mining districts. It means that the carriers have been peculiarly exact in the arrangement of their ore tariffs, or that the shippers are not watching freight rates closely.

In the coal mining regions, however, the commission is being called upon for an increasing amount of adjustment and straightening out of tariffs.

INQUIRERS CROWD BOOTH OF SURVEY AT CHEMICAL SHOW

Dr. Thomas H. Norton, of the Department of Commerce, has written the Geological Survey commending it for its exhibit at the recent Chemical Show in New York City.

Dr. Norton noted that a large group of inquirers always was present in front of the Survey's booth.

As a matter of fact, the Survey's exhibit at the Chemical Show was not at all indicative of the important work being done in this division of the Survey. The chemical work of the Survey does not lend itself readily to exhibition purposes.

JEFFREY MANUFACTURING CO. MAKES IMPROVED FAN

The Jeffrey Mfg. Co., Columbus, Ohio, manufacturers of tipple and coal-mine machinery, have issued Bulletin No. 110 on the subject of "Mine Ventilation," calling particular attention to their new "stepped multi-bladed wheel type of fan," which by means of its stepped series of blades, receives and accelerates the air without shock and discharges it at low velocity, insuring maximum economy of operation. This bulletin also illustrates and describes their line of centrifugal booster fans, and contains valuable data compiled to give the mine superintendent, manager or those interested in this line of work a comprehensive idea of the results obtained from various sizes of Jeffrey mine fans. A free copy of this bulletin may be obtained by addressing the home office of the company at 958 North Fourth Street, Columbus, Ohio, or any of their branch offices.

Recent Patents of Interest to Miners

ASSIGNED TO INGERSOLL-RAND

Coal Mining Machine. No. 1,154,922. This invention is by Charles C. Hansen, of Easton, Pa., and is assigned to the Ingersoll-Rand Co., of Jersey City, N. J.

It relates to coal mining machines and more particularly to a hammer tool of a type having means for adjusting and holding the cutting tool in different operative positions.

The object of the invention is to construct a machine with which the coal cut out in making the undercut can be removed in large lumps without waste, and to accomplish this result the machine consists of a bit shaft which does not reciprocate, but is actuated by the impact of a hammer piston, and is provided with a wedge-shaped chisel bit and with means to turn this bit into four positions and maintain it in these positions without attention from the operator. With this drill a different system of cutting is used, as the bit is first rotated in one place to drill a hole the depth of the desired undercut, and then the coal is broken off toward the hole from four directions, the position of the bit being changed for each direction.

SEPARATES BOULDERS

Ore Disintegrating and Screening Machine. No. 1,156,394. This invention is by George Woodson Crowe, of Santa Cruz, Cal.

The invention relates to improvements in apparatus for treating auriferous gravel or other ore bearing material to disintegrate and screen prior to its subjection to quicksilver in the sluice box riffles. It is particularly desirable for working ore bearing material that cannot be easily subjected to the sluicing operations and which is consolidated by cement so that disintegration by attrition and erosion is necessary.

The invention provides a unitary rotatable shell structure wherein the material in its passage through, is first subjected to disintegrating action and then to a separating, classifying and screening action, so that boulders or larger pieces of material will be separated from the finer pieces.

ASSIGNED TO HOCKENSMITH

Mine Car Wheel. No. 1,154,990. This invention is by Wilbur D. Hockensmith, of Penns Station, Pa., and is assigned to the Hockensmith Wheel & Mine Car Co., of Penns Station, Pa.

The primary object of this invention is to provide a simple and efficient means for holding the closure in open position and out of engagement with the wall through which the filling opening is formed, thereby relieving the closure of damaging strain when in open position, and also from danger of injury when moving from closed to open position. The improvement also provides efficient means for locking the closure in closed position.

NEW MINE DOOR

Manually Operated Mine-Door. No. 1,155,703. This invention is by Newton K. Bowman, of North Lawrence, Ohio.

This invention has particular reference to an improved construction in doors of the type adapted for use in connection with manways.

It provides a door which is equipped with a sealing strip adapting the door for service as an effectual air barrier and is provided with an operating mechanism so constructed that putters or other pedestrians using the manway may open and close the door either by hand or foot pressure.

The sealing strips are fashioned of canvas or some similar durable fabric, and are so arranged that the air current in the manway will constitute the force normally tending to hold the strips in sealing relation to the door and its frame.

Mr. Bowman claims that this door will embody the essential features of simplicity, durability and efficiency and may be readily and conveniently set up for operation with a minimum expenditure of time and labor.

ASSIGNED TO DORR COMPANY

Ore Classifier. No. 1,156,543. This invention is by David J. Nevill, of Denver, Col., and is assigned to the Dorr Cyanide Machinery Co., of Denver, Col.

It relates to a classifier or dewaterer, which consists of an inclined settling trough in which a rake element has a reciprocating movement to impel the sands settled out of a wet pulp to a discharge opening, while the slimes are maintained in suspension and discharged at the opposite end.

This invention relates more particularly to improvements in the rake element, and in the mechanism for operating and adjusting same. One of its objects is to provide a rake construction by which the transverse gullies produced in the sands on the bottom of the trough by the reciprocating motion of the rake blades, are at the upper end forming a slope to one side for the purpose of draining water carried upwardly with the sand to the lower end of the machine.

It also provides improvements in operating and adjusting mechanisms whereby their construction is simplified and their operation greatly facilitated.

ASSIGNED TO JEFFREY

Safety Device for Power Transmission. No. 1,156,397. This invention is by Henry Beecher Dierdroff, of Columbus, Ohio, and is assigned to the Jeffrey Mfg. Co., of Columbus, Ohio.

The invention relates to safety devices, and has for its object to provide means simply constructed and convenient to use for automatically preventing the transmission of excessive power by a train of power transmitting devices and relieving the other more important parts of the mechanism of undue stress.

The invention consists in the provision of an integral collar or washer-like part of frangible material having a non-circular aperture to fit a non-circular part of a shaft, and having an interlocking engagement with a gear, wheel, etc., sleeved loosely upon the shaft, so that the three parts, shaft, washer and sleeve are held against relative rotation normally, while the relative weakness of the washer insures its breakage and the consequent saving of the other parts when the mechanism is subjected to abnormal stress.

IGNITION METHOD

Apparatus for electrically igniting miners' safety lamps. No. 1,154,992. This invention is by Victor Ernest Joyce, of London, England.

The invention relates particularly to the type of apparatus in which hand driven electricity generating apparatus is employed for providing the current necessary for igniting the lamp. It has for its object an improved construction of appartus which will be simple, strong and efficient.

The safety-lamp igniter has a combination with a cylindrical casing provided with a partition which separates its end portions into two chambers for a lamp and for an electricity generator. The lamp chamber has a single lateral opening for the introduction and removal of the lamp, and the generator chamber has on one side a means for effecting the working of the generator. It has a cylindrical sleeve which slides longitudinally on the casing, which closes the lateral opening, and prevents the generator from being operated when slid so as to uncover the opening.

MAKES IRON BRICKS

Briqueting ore concentrates. No. 1,155,311. This invention is by Charles F. Hermann, of Scarsdale, N. Y., and relates particularly to the method of forming briquets from iron ore concentrates, and the apparatus for carrying the process into effect in a commercial way.

This invention presents a method of forming a large number of briquets of wet iron ore concentrates preparatory to passing the briquets so formed through kilns of the channel type. By this method material carrying a varying amount of moisture may be briqueted without being drained and dried in settling tanks. The apparatus includes a means for feeding the wet concentrates into molds or die boxes, means for pressing and dewaterizing the material so that it assumes a form and consistency proper for further handling, and means for stacking the briquets upon the kiln cars in position for being properly burned while passing through the kiln.

ASSIGNED TO AGRICULTURAL RESEARCH CO.

Process for Smelting Zinc. No. 1,154,802. This invention is by Samuel Peacock, of Philadelphia, Pa., and is assigned to Agricultural Research Corporation of New York, N. Y.

It relates to a process of smelting zinc and has for its object the provision of a method by which a larger proportion of the zinc smelted can be recovered as molten zinc than is now possible by present methods.

The process consists in mixing a carbide with zinc oxide in the proportions of one equivalent of carbide to a plurality of equivalents of zinc oxide, and raising the temperature sufficiently to cause a smelting reaction.

INVENTS MINE CAR BRAKE

Mine Car Brake. No. 1,155,964. This invention is by Henry Dow Scott, of Sheridan, Wyo., and relates to brakes for mine cars. Its principal object is to improve mine car brakes so that they are more effective and serviceable.

The invention is the combination with a vehicle body, a pair of axles, a pair of wheels, a rock shaft midway between and parallel to the axles, and cams secured upon the ends of the rock shaft. It also has an arm secured at one end to the rock shaft, lying directly in the plane of the lever connections between the lever and the arm. There is a pair of brake blocks between each pair of wheels.

OTHER PATENTS

Other patents granted were: No. 1,155,311, to Edward Torrety, of Thetford Mines, Quebec, Canada, ore separator; No. 1,151,601, extraction, purification, etc., of metallic zinc from smelter fumes, zinc ores and the like, to Otto Best, of San Francisco, Cal.; No. 1,151,602, to Otto Best, San Francisco, Cal., Hyrometallurgy of zinc; No. 1,156,041, to G. C. Stone, of New York City, apparatus for concentration of minerals by foltation. This invention is assigned to the New Jersey Zinc Co.; No. 1,155,815, to A. H. Higgins and Wm. H. Stenning, of London, England, apparatus for ore concentration; No. 1,155,628, to Sewall Truax, of Cannon City, Colo., method for treatment of zinc ore, assigned to Granadena Mining Co., of Arizona; No. 1,156,382, to R. S. Towne, of New York City, process of extracting metals from ores, assigned to Metallurgical Engineering & Process Corp., of New York, N. Y.; No. 1,156,276, to W. E. Darrow, of Sutter Creek, Cal., Slime thickener for dewatering mine tailings.

Traffic Developments of the Month

While the American Coal and Coke Company lost its case before the Interstate Commerce Commission against the Michigan Central many points of general interest to the coal trade were brought to light in the investigation.

On complaint that the carrier unjustly discriminates against and unduly prejudices complainant by refusal to extend credit to it with respect to freight and demurrage charges accrued on carloads of coal held at Windsor, Canada, and Detroit, Mich., while extending credit to competitors under like circumstances, the Commission held that the evidence fails to show that complainant is discriminated against or prejudiced within the meaning of the act.

Commissioner Clements, who wrote the decision said:

"Complainant is a corporation engaged in buying and selling coal at Detroit, Mich. It alleges that the defendant has subjected it to undue prejudice and disadvantage by refusing to extend credit to it for freight and demurrage charges on coal in carloads consigned to it at Detroit, while extending credit to complainant's competitors under like circumstances.

STORAGE LIMITED

"Coal shipped to complainant from the east moves to Detroit over the rails of defendant via the Niagara frontier and Windsor, a point in Canada immediately accross the river from Detroit. Coal dealers in Detroit do not as a rule have storage facilities, but have their coal held in cars until delivery orders are given. In the year 1912 there was serious congestion on the tracks of the defendant in Detroit. To relieve the congestion the defendant established certain terminal yards at Windsor and at points in Detroit. Effective February 15, 1913, it published a tariff which provided that demurrage charges would be assessed on cars held in the Windsor yards to await reconsignment or delivery orders. Coal dealers in Detroit, including complainant, questioned the right of the defendant to collect demurrage on coal consigned to Detroit and held at Windsor. The complainant together with other dealers, refused to pay demurrage charges which accrued on cars held at Windsor until the legality of such charges should be determined.

"The defendant extends credit to coal dealers generally in Detroit to the extent that payment of freight and demurrage charges may be made at the end of stated periods, instead of requiring payment when delivery orders are given from day to day. Complainant was on defendant's credit list for many years. In August, 1913, it was notified by defendant that credit would no longer be given it unless it was more prompt in payment of accruing freight and demurrage charges, and complainant at that time agreed to make prompt payment of all accruing charges. In January, 1914, it was again reminded by defendant of its failure to make prompt payment of both freight and demurrage charges, and it then advised defendant of its refusal to pay demurrage on any account. Complainant's name was stricken from defendant's credit list some time in January, 1914. In a statement of accrued demurrage submitted by defendant, and which the complainant refused to pay, there was the sum of $199 which had accrued on cars held at other points than Windsor. It also contained items which complainant acknowledged were correct. May 21, 1914, suit was commenced in a State court against complainant by defendant to recover $1,551 claimed as unpaid demurrage charges.

WINDSOR DEMURRAGE

"Several coal dealers in Detroit have refused to pay varying amounts claimed by defendant to be due as demurrage charges on account of cars held at Windsor, while suits have not been brought against them therefor. Other coal dealers in Detroit, who remained on the credit list of defendant, have paid or have agreed to pay, all demurrage charges except those assessed on cars held at Windsor, with respect to which they have also agreed to pay if the validity thereof shall be established.

"The complainant rests its case upon the showing that its competitors had not paid demurrage charges on cars held at Windsor, and that suits had not been begun against any of them on account thereof. Complainant contends that it has been unduly prejudiced by the removal of its name from the defendant's credit list, and because suit has been brought against it, while its competitors have not been similarly treated.

"The defendant contends that its refusal to give credit to complainant, while extending credit to its competitors, is not prejudicial to the former within the meaning of the act, no matter whether the conditions are similar or not. To support this contention, the defendant cites Gamble-Robinson Commission Co. *vs.* C. & N. W. Ry. Co., 168 Fed., 161, and Hocking Valley Ry. Co. *vs.* U. S., 210 Fed., 735. It also contends that no prejudice within the meaning of the act may be predicated on its bringing suit against complainant and not against others.

GAMBLE-ROBINSON CASE

"The full force of defendant's contention is that its refusal to extend credit to one shipper while granting it to another similarly situated cannot be held to violate the law. It was held in the Gamble-Robinson case, *supra*, which was a suit for damages growing out of the refusal to extend credit to the plaintiff company, that an interstate carrier does not subject a consignee to an undue or unreasonable prejudice or disadvantage under section 3 of the act by exacting, after due notice to it, the prepayment of charges for transportation of all property consigned to it, while it does not require such charges to be paid in advance upon freight consigned to others similarly situated. It is urged by the defendant that this holding of the court is controlling here. This we are not prepared to concede. Section 15 of the act provides, among other things, that whenever upon due procedure and after full hearing the Commission shall be of opinion and find that any regulation or practice of any carrier subject to the act is unjust or unreasonable or unjustly discrimatory or unduly preferential or prejudicial it has the power to determine the question and make an order that the carrier shall cease and desist from the violation of the act found to exist. Clearly the Commission has no authority as an independent proposition to require a carrier to extend credit to any of its patrons for charges for its services. However, it has long been a practice of carriers, for the convenience of themselves as well as their patrons, to accept payment of accumulated charges at the end of brief stated periods, and this practice has not been found unlawful. We can not doubt, however, that the all-embracing prohibitions of the law against undue or unreasonable preference, prejudice, or disadvantage apply to this practice as to all others. Not all discriminations are unlawful, but only those that are unjust. Is the discrimination here complained of unjust in the light of facts shown? We think not.

REFUSED TO PAY

"The complainant appears to have refused to pay any demurrage charges, whenever and however accruing. This put complainant in a different attitude from that of other patrons and left the defendant no other reasonable alternative but to demand payment of its lawful charges before delivery of the freight. The fact that suit was commenced against the complainant, and not against its competitors, does not prove undue prejudice within the meaning of the act. The obligation, under penalties of the law, is upon the defendant to collect its established charges from all by such lawful methods as may be suitable and necessary for the purpose.

"Under all the facts shown of record we are of opinion and find that complainant has failed to show that he has been unjustly discriminated against or that he has been unduly prejudiced by the acts of the defendant, of which complaint is made. The complaint will, therefore, be dismissed."

Finds Asbestos Rate Unjust

In the case of the Philip Carey Manufacturing Co. et al., *vs.* Grand Trunk Western Ry. Co. et al., in which complaint was made that rates on asbestos sand in carloads from Robertson, Thetford and Sherbrooke, Quebec, to Lockland and Rockdale, Ohio, are unreasonable and unjustly discriminatory, the Commission held that:

1. Rates in question do not conform to the general adjustment of rates between the Canadian territory of origin and the group in which these destinations are located; the rates on asbestos sand to Rockdale and Lockland are higher than from the same points of origin to Chicago and Milwaukee, while the rates on asbestos fiber from the same points or origin to Rockdale and Lockland are lower than from the same points of origin to Chicago and Milwaukee, the fiber being a lighter loading commodity and much more valuable than the sand. The rates attacked are therefore unjustly discriminatory against complainants.

2. Following International Paper Co. *vs.* D. & H. Co., 33 I C. C., 270, and cases therein cited, the Commission's jurisdiction in connection with transportation to or from an adjacent foreign country is over that portion of the transportation within the confines of the United States. The Commission cannot, therefore, prescribe joint through rates from points in Canada to points in the United States, but it can control the rates which the lines in the United States charge for services rendered within the United States. Joint rates from and to points in Canada are a convenience to the public and the shippers and should be encouraged. It is therefore expected that the defendants will comply with the finding that the rates to Lockland and Rockdale are unjustly discriminatory to the extent that they exceed the rates contemporaneously maintained to Chicago or Milwaukee by proper readjustment of the present joint through rates. If this is not done an order will be entered requiring defendants that are subject to our jurisdiction to establish in lieu of the present rates joint or local rates from the ports of entry in the United States to Lockland and Rockdale which shall be no higher than those contemporaneously maintained to Chicago or Milwaukee.

Hauto Case Decided

In the matter of allowances on anthracite coal at Hauto and Nesquehoning, Pa., in which the Central Railroad Company of New Jersey proposed by the tariffs under suspension to pay to the Lehigh Coal & Navigation Company certain lateral allowances out of the rates on shipments of anthracite coal from Hauto and Nesquehoning, Pa., the Interstate Commerce Commission holds that the allowances would effect unlawful discrimination and constitute unlawful rebates. The tariffs were ordered canceled.

Hearing at Pittsburgh

A hearing has been assigned at Pittsburgh before Examiner Lahoe in the case of the Pittsburgh & Chicago Mining Co. *vs.* the Baltimore & Ohio R. R.

Prescribes Pig Iron Rates

In the case of the Low Moor Iron Company et al., *vs.* Chesapeake & Ohio Ry. Co. et al., rates on pig iron were prescribed from certain Virginia furnaces to points related to Baltimore, Philadelphia, New York and Boston.

Oil Hearing Cancelled

The hearing scheduled for October 19 at Cleveland, in the matter of petroleum products from Kansas points, has been cancelled. This case is I. & S. 670.

Concessions Denied

Application of the Louisville & Nashville Railway, asking concessions in coal rates to Pensacola, when the coal is destined for bunkerage and purposes other than export, has been denied by the commission in its fourth section order No. 5171.

Rehearing Denied

A rehearing has been denied in the matter of rates on coal from mines in Alabama, Illinois, Kentucky and Tennessee, to New Orleans, Memphis and other southern cities. The application was made by the Ohio Coal Operators' Association.

Coal Hearing Cancelled

A hearing set for November 1 in St. Louis, of the case of the Vulcan Coal & Manufacturing Co. vs. Illinois Central; the St. Louis Coulterville Coal Co. vs. Illinois Central, and the Groom Coal Company vs. Illinois Central, has been cancelled. These cases are grouped as Docket No. 6128.

Coal Rehearing Denied

In docket No. 7376, Reeves Coal Company vs. Louisville & Nashville Railway, the complainant's request for a rehearing has been denied by the commission.

To Discuss I. & S. 596

A hearing has been assigned for November 4, in Washington before Examiner Woodward to discuss the features of pig iron rates from Virginia furnaces covered by I. & S. 596.

Suspend Wyoming Coal Rates

Proposed increases of rates on coal in carloads from certain mines in Wyoming and Colorado to interstate destinations on the Union Pacific have been suspended until April 28. Briefs in the case have been filed by W. H. Young, of Fremont, Nebr., for the interventors, and by Carl Whitehead, for the Colorado Coal Co.

Coal Allowances Suspended

It has been decided to suspend until April 15, tariff of the Central Railroad of New Jersey, dealing with certain allowances to be paid the Lehigh Coal and Navigation Co., on coal shipped from Hauto to Nesquehoning. These rates have been suspended previously from June 17 to October 15.

Southern Rates Suspended

Proposed increases of coal rates from mines located on the Nashville, Chattanooga & St. Louis Ry. in Tennessee to points on the Southern Ry. have been suspended until February 4.

Ferromanganese Rate Suspended

Proposed increases of rates on imported ferromanganese in carloads from the eastern seaboard to Portsmouth, Ohio, and other points in Central Freight Association territory have been suspended until April 29.

Coeur D'Alene Rate Settled

Class and commodity rate questions from and to points on the Coeur d'Alene line of the Northern Pacific, have been settled by the commission's fourth section orders Nos. 5168-69.

Peabody Coal Case to Be Heard

A hearing has been assigned for November 26, at Chicago before Examiner Smith for consideration of the case of the Peabody Coal Co., *vs.* Eastern Illinois Ry.

Submits Brief in Coal Case

The Louisville & Nashville Railway has submitted its brief in the Virginia Coal & Coke case.

To Hear Colorado Case

A hearing has been assigned for December 9, in Denver, in the case of the Alliance Coal & Coke Co., *vs.* Colorado & Southern Railway. It will be before Examiner Butler.

Pig Iron Case Assigned

The matter of pig iron rates from Virginia furnaces will come up at a hearing in Washington, November 2, before Examiner Woodward.

Powder House Blown Up

A spectacular explosion took place last month at the Granite mine near Valdez, Alaska. Sixty-seven boxes of gelatine powder were exploded. All the buildings within a considerable radius were badly shaken but no loss of life or serious damage resulted.

The Granite mine is operated by the Granite Gold Mining Company, of which B. F. Millard is president.

PRESIDENT TO CONSIDER THE POINTS MADE BY HERTY

Promises to Accede to Request Made by Council of American Chemical Society

President Wilson has promised to give special attention to information contained in the address of Charles H. Herty, president of the American Chemical Society.

This address deals with cooperation in chemical matters and has a direct bearing upon the economic welfare of the country.

By a vote of the council of the American Chemical Society, it was decided to request the President to give the address special attention. This was done, and the council has been assured that the President will grant this request.

Extracts from President Herty's address follow:

Let me discuss with you cooperation between the American people, through their representatives in Congress, and our chemical industries. I have no leanings toward paternalism, and I believe in the doctrine that a good, stiff struggle for existence is conducive to longevity, but there are certain normal functions of our National Congress which make or mar industrial development, and there are certain undertakings in behalf of the Nation as a whole which individuals can not be asked nor expected to assume.

Recent events compel the conviction that the assumption of our peaceful world relations, which formed the basis of my earlier plea, may be at any moment completely shattered. In such an event the responsibility of all chemists in this country will be added to by the impelling call of patriotism. That the contributions of our science are of the highest value in modern warfare is daily attested in the reportorial accounts of the new developments among the now contending nations. Who would dare say that the innovations of chemistry in the methods of warfare have reached a limit?

In view of this recognized fundamental importance would it not be well, in these days of talk of preparedness, to consider the question of chemical preparedness. Ships, guns and shells are necessary, yes, but most largely as a means to an end, and that end the effecting of a violent chemical reaction at a point more or less distant. Naturally in matters of preparedness there are topics whose public discussion is inadvisable, but there is one to which I do not hesitate to allude, for the facts are all matters of published record, and that is the question of the visible supply of sodium nitrate in this country.

SELF-CONTAINEDNESS

In these days of rapidly shifting international relations the only sound and rational policy is national self-containedness. Blessed with a rich heritage of wonderful and varied natural resources, and, in our isolation, confident of freedom from grave international complications, we have received potash supplies from Germany with but scant forethought, save in the National Bureau of Soils; and now, today, agriculture is seriously threatened; so too textile manufacturers, reaping a bountiful harvest from the laboratories and dyestuff factories of Germany, have given no helping hand to the struggling young home industry which with a fair show would now have been able to meet the present serious deficiencies. Of far greater importance, at least from the standpoint of preparedness for war, is the fact that at present we are dependent solely on Chili for supplies of sodium nitrate, the crude material for nitric acid, that *sine qua non* in the manufacture of all modern explosives, whether guncotton, trinitrotoluene, picric acid, fulminating mercury or what not.

True, the work of the chemist has shown in later years how to prepare this substance from the nitrogen of the air, but such processes have not been able to compete commercially in this country with its manufacture from sodium nitrate and sulphuric acid. Equally true, we now see no immediate probability of any shutting off of the supply of nitrate from Chili; in the question of preparedness for war, however, probability has no place where certainty can be assured.

It would seem the part of wisdom, therefore, to accumulate, through governmental aid or agency, sufficient extra supplies of sodium nitrate to assure, in case of war, maximum activity of explosive manufactories until sufficient plants could be erected for the adequate manufacture of nitric acid from the air. The annual importation of this material averages 550,000 tons, which represents an investment of approximately fifteen million dollars. The presence of an extra year's supply within our borders might prove of inestimable value. If, happily, the war cloud passes, such accumulations of nitrate would then be gradually absorbed in the more peaceful lines of the fertilizer industry, and the cost of such preparedness be thus limited to the expense of storage and the interest on the funds invested.

PATENTS AND TARIFF

The phrase "chemical preparedness" refers really to the whole question of the status of chemical industry. Have we so grappled with the many questions of material national life that we can await future political developments with quiet confidence and utmost faith? Undoubtedly much has been accomplished, but this is no time for self-congratulation. Far more profitable will it be to look shortcomings squarely in the face, to trace influences which have retarded progress and to endeavor in every legitimate way to overcome such influences. Time does not admit of too extensive treatment of this subject, but there are two matters whose present importance justify further discussion. I refer to the patent system and to our tariff legislation.

The apparently authentic statement that more money is spent in this country to secure and defend patents than is earned from all those issued seems a sad commentary either on the morals of the nation or on the efficiency of the patent system. With a natural unwillingness to admit the first alternative we are forced then to ask wherein lies the deficiency of the patent system?

Primarily, and of greatest importance, is the failure of our people as a whole to understand the purpose of a patent system and its value as a national asset. Its purpose is to foster a creative spirit throughout our citizenry by giving to intellectual rights that legal protection in ownership which is afforded property rights, such ownership carrying with it the right to profit therefrom. He who creates is entitled to remuneration, for by his originality he places the nation in his debt. Such indebtedness is no hardship, for the patentee takes nothing away, but makes his entry in advance on the credit side of the national ledger. That such entries may represent maximum creative ability, it is essential that they be made in an atmosphere of good-will and in full confidence of due and prompt guardianship of the account.

Too often the attitude of the public is one of antagonism to the patentee, and too often manufacturers, pursuing a short-sighted policy, endeavor in every way to evade his legally conferred rights. Is it a worthy thought on the part of "business," that, since inventive genius so often lacks business qualifications, it offers a fair field for commercial piracy? Let us shake off such thoughts and by cooperation seek to promote that creative spirit, the fostering of which lay in the minds of those who founded the patent system.

The value of the patent system as a national asset lies not only in the constant additions to daily welfare, but also in the eventual public ownership of the new ideas underlying these contributions, for the life of a patent is only seventeen years, during which time expenditure both of brain and of funds is necessary to bring the idea to its highest practical development; then the idea legally becomes the property of the nation for unrestrained use. Are we willing that this national asset should be depreciated by an unending tax on the time, thought and finances of composite American genius?

If these general considerations ever find full lodgment in the public mind, there will be no difficulty in securing such congressional action as will perfect the patent system and legal procedures incident thereto, thus enabling it to serve fully those high ends for which it was designed.

WEAKNESS REVEALED

Finally, in the light of the present situation, may we not hope for more generous cooperation between Congress and our chemical industries in solving those innate economic difficulties whose temporary correction can be provided for only through adequate tariff legislation? I realize fully that the trend of national opinion in recent years has been toward a lowering of tariffs, in the conviction that industrial giants were parading in the guise of swaddling clothes, but the present unforeseeable situation, resulting in the cessation of imports from the chemical industries of Germany, has shown to all several strikingly weak links in our industrial chain. We cannot afford such. "National self-containedness" is a more fitting slogan for us now than "Tariff for revenue only." If such links are to be strengthened, we must, as a people, meet the expense by giving for a reasonable time that measure of protection which will effect a union of capital and scientific skill under no undue stress of unfair foreign interference.

HEADQUARTERS OF BUREAU OF MINES EXPERTS CHANGED

An important change in the Bureau of Mines has been made by Director Manning in stationing the chief mining engineer and the chief chemist in Washington.

George S. Rice, chief mining engineer, formerly has been stationed at Pittsburgh. In the future his headquarters will be in Washington. F. G. Cottrell, chief chemist, has had his headquarters at San Francisco.

It is believed that much more effective service can be done with these men in constant touch with the Director and the various experts of the Bureau who are stationed in Washington.

HOPES TO SEE NEW COPPER ASSOCIATION FORMED

In commenting on the passing of the Copper Producers' Association, B. S. Butler, in charge of copper at the Geological Survey, says:

It is hoped that some new organization may be formed, in which not only the condition of the producing but also the consuming end of the industry shall be represented at frequent intervals, so that there shall be no undue advantage but rather a mutual helpfulness in regulating the industry to the best advantage of all concerned.

TOPOGRAPHIC MAPS GREAT AID IN CASE OF WAR

Another asset possessed by the topographic maps made by the United States Geological Survey which is not usually known among their advantages is the service that such maps would give in case of war.

Similar preparations by the French and German geological organizations have proved to be of the greatest service in conducting the campaigns in northern France. The French topographers have carefully mapped the whole of that republic and many of the areas in which fighting is being conducted were mapped in great detail.

No Withdrawals or Restorations

An unusual thing happened in September in that there were no withdrawals or restorations of public lands during the month.

Pleased with Mining Congress Journal

B. F. Millard, president of the Granite Gold Mining Co., of Valdez, Alaska, writes as follows:

"I am certainly pleased with your MINING CONGRESS JOURNAL. It is a great source of information to the mining man."

GOLD DISCOVERING DEVICES CONTINUE TO SELL BRISKLY

It is a matter of considerable wonder how venders of certain useless devices find a market for their product. The sale of contraptions whereby it is claimed gold and silver and other minerals may be located, is apparently continuing profitably.

Most of these devices are based upon magnetic properties which the venders claim are possessed by the metals sought.

Iron, nickel and some other minerals containing these metals are magnetic. Instruments have been devised to prospect for iron by the use of this characteristic property.

Iron deposits, as a rule, are the only ones sufficiently magnetic to be discovered by this means. Gold, silver, lead, copper and zinc ores are not magnetic and there is no instrument that will indicate the presence of these metals or their ores when they are hidden from view beneath the ground. Such instruments are offered for sale, as a rule, with an intent to defraud.

These well-known truths seem not to have reached the eyes and ears of a considerable number of persons, judging from the increased business that is reported in instruments of this character.

Put Gauging Stations on the Columbia

International gauging stations are being established on the Columbia and other rivers forming the boundary between the United States and British Columbia. The Geological Survey and the authorities of British Columbia are cooperating in this work.

Boston Branch in New Quarters

The recently authorized Boston branch of the Geological Survey has occupied its permanent quarters in the Custom House, and all stream gauging in New England will be directed from this office. Maine, Massachusetts and Vermont are cooperating with the Survey in this work in those States.

Mendenhall—Boutell

W. C. Mendenhall, chief of the Land Classification Board of the Geological Survey, was married to Miss Alice Boutell, of New York, September 20. Mr. and Mrs. Mendenhall will be at home at the Ontario Apartment, in Washington, after November 15.

After the ceremony, Mr. and Mrs. Mendenhall spent three weeks in the Lake George country of the Adirondacks.

Mr. Mendenhall is a native of Marlboro, Ohio, but has been a resident of the West and Alaska since completing his schooling. He is a graduate of Ohio Northern, Harvard and Heidelberg.

He began his service with the Geological Survey in 1894 previous to the completion of his education. In 1908 he was made head of the Division of Underground Waters, and in December, 1910, became head of the Land Classification Board.

Mr. Mendenhall is widely known among mining men throughout the West, as he has worked in nearly every State, although he perhaps is known best for his Alaskan work.

Survey Does No Assaying

Attention is called by the United States Geological Survey to the fact that it does not make analyses or assays of ores or metals for the public.

Many specimens and samples are received by the Survey, accompanied by requests for assay or analysis. It is impossible for the Survey to comply with such requests. The most it does is to give an offhand opinion based on a simple examination of the specimen.

If an assay is desired the proper course is to employ a private assayer. The specimen can be sent to one of the Government assay offices, where a regular charge is made for such work.

In sending specimens to the Survey for examination applicants should be particular to state whether they wish them returned, as otherwise they are destroyed.

OUTSTANDING WITHDRAWALS TOTAL 58,609,823 ACRES

Summary of withdrawals and restorations during the period March 4, 1913, to September 30, 1915, in acres:

	Outstanding withdrawn March 4, 1913	*Withdrawn during period*	*Restored during period*	*Outstanding withdrawn Sept. 30, 1915*
Coal	65,410,464	334,979	17,363,097	48,382,346
Oil and gas	4,817,706	529,654	538,619	4,808,741
Phosphate	3,367,378	443,932	1,150,934	2,660,376
Potash	133,829	211,384	3,200	342,013
Power site	1,857,258	541,970	164,906	2,234,322
Public water	86,216	98,431	2,622	182,025
Totals	75,672,851	2,160,350	19,223,378	58,609,823

EARLY EFFORTS OF THE GOVERNMENT TO AID MINING WERE UNSYSTEMATIC

First Mining Land Laws Were Disregarded Almost Entirely—North Carolina Established Geological Survey in 1825—Lewis and Clark Expedition Gathered Facts as to Minerals of Every Kind

Inadequate as is the government aid given the mining industry a tortuous course was followed before any systematic help was extended.

The first attempt at a governmental geological survey was made by the State of North Carolina in 1825. Geological surveys were afterward established by Massachusetts in 1830, by Maryland in 1834, and by Virginia in 1835, the same year in which the first national geological survey—that of Great Britain—was organized. Other States of the Union subsequently established geological surveys, as set forth in Bulletin 465 of the United States Geological Survey.

Most of the national topographic and geologic surveys or explorations made by the United States prior to March 3, 1849 when the Interior Department was organized, were carried on under the War or Treasury Department. The most notable of the earlier surveys, and the first Government survey of the West, was the Lewis and Clark expedition of 1804–1806, planned by President Jefferson and carried on under his supervision. A brief account of this expedition is given in Bulletin 611 of the United States Geological Survey, on pages 47–50. The expedition was instructed to gather information on a great variety of subjects, including "the soil and face of the country, its growth and vegetable productions; the animals of the country, and especially those not known in the United States; the mineral productions of every kind, but more particularly metals, limestone, pit coal, saltpeter, salines, and minerals . . .; volcanic appearances; and climate." The first official report of the results of this expedition is included in a message sent by President Jefferson to Congress, dated February 19, 1806.

OTHER EXPEDITIONS

Other early explorations, also planned by President Jefferson, were those made by Lieut. Zebulon M. Pike, in 1805–1807, to the headwaters of the Mississippi and to the Southwest. A brief account of Lieutenant Pike's expedition to the Northwest is given in Bulletin 611 of the United States Geological Survey, on pages 20, 21.

The best known of the earlier geological surveys or surveys that involved or included the examination of geologic features are as follows:

In 1819-20 Maj. Stephen H. Long, under the direction of John C. Calhoun, Secretary of War, made an expedition from Pittsburgh to the Rocky Mountains. With him were associated Thomas Say, entomologist, and Edwin James, botanist and geologist. The accounts of the expedition contain numerous references to the geology of the region. The route lay from Pittsburgh down the Ohio to its mouth, up the Mississippi to St. Louis, and northwestward to Council Bluffs; thence westward along the Platte and South Platte to a point a little west of the one hundred and fifth meridian and north of the thirty-fifth parallel, across to Arkansas River, which was followed down to a point a little east of the one hundred and fourth meridian, where the party divided, one returning by the Arkansas and the other by Canadian River.

In 1820 Henry R. Schoolcraft, acting under direction of Governor Lewis Cass, of Michigan, who was himself acting under authority of the Secretary of War, made a trip along the Great Lakes and to the sources of the Mississippi, the results of which, with general notes on the natural history of the region, were published in 1820.

REPORTS ON MISSISSIPPI VALLEY

In 1821 Schoolcraft was a member of a second expedition authorized by the general Government to explore the central portions of the Mississippi Valley, the results of which were published in 1825. In 1822 he also reported to the general Government on the extent and value of the mineral lands on Lake Superior, and again in 1832 resumed and completed his explorations of the sources of the Mississippi.

In 1823 Maj. S. H. Long received orders from the War Department to make an expedition for a general survey of the country in the vicinity of the Great Lakes and the sources of the Mississippi; to prepare a topographic description of the country; to ascertain the latitude and longitude of all the remarkable points; to investigate the products—animal, vegetable, and mineral—and to inquire into the characteristics and customs of the Indians. The route of the expedition began at Philadelphia and led through Wheeling, W. Va., to Chicago by way of Fort Wayne; thence to Fort Crawford and up the Mississippi to Fort St. Anthony and the source of St. Peters River; thence to the point of

intersection between Red River and the forty-ninth parallel; along the northern boundary of the United States to Lake Superior, and thence homeward by the Great Lakes. Although not intended primarily as a scientific survey it was accompanied by Thomas Say, zoologist, and William H. Keating, mineralogist.

In July, 1834, G. W. Featherstonhaugh was authorized by Lieut. Col. J. J. Abert, acting under instructions of the War Department, to make a geologic and mineralogic survey of the "elevated country lying between the Missouri River and Red River, known under the designation of the Ozark Mountains." The survey was made and a report was published February 17, 1835.

GIVEN ANOTHER COMMISSION

In 1835 Featherstonhaugh, again under instructions from Lieutenant Colonel Abert, made a geologic reconnaissance of the region lying between the seat of government and the Coteau des Prairies, by way of Green Bay and the Wisconsin Territory. His report was issued in 1836.

After 1807 all Government lands containing ores were reserved from sale and a system of leasing was adopted, but no leases were issued until 1823 and little mining was done before 1826. For a few years rents for the mining lands were paid by the operators with comparative regularity, but after 1834, in consequence of the innumerable fraudulent entries of lands as agricultural, which should have been reserved as mineral, the smelters and miners refused to make any further payments, and the United States officers were entirely unable to enforce the claims of the Government. In consequence of these difficulties the following resolution was adopted in the House of Representatives, February 6, 1839:

"That the President of the United States be requested to cause to be prepared, and presented to the next Congress at an early date, a plan for the sale of the public mineral lands, having reference as well to the amount of revenue to be derived from them and their value as public property as to the equitable claims of individuals upon them; and that he at the same time communicate to Congress all the information in possession of the Treasury Department relative to their location, value, productiveness, and occupancy; and that he cause such further information to be collected and surveys to be made as may be necessary for these purposes."

REPORTS ON LARGE AREA

In accordance with this act David Dale Owen was appointed Government geologist under direction of the General Land Office (then an office in the Treasury Department, James Whitcomb, Commissioner) to make surveys in Iowa, Wisconsin, and northern Illinois. The district explored comprised about 11,000 square miles lying in equal portions on both sides of the Mississippi, between parallels 41° and 43°, beginning north of Rock River and extending thence north more than 100 miles to Wisconsin River. Owen's first published report bore date of April 2, 1840.

In 1844 Douglass Houghton, in association with W. A. Burt, devised a plan for connecting the linear surveys of the public lands of the United States with the geologic and mineralogic surveys. On the recommendation of the General Land Office (Treasury Department) Congress appropriated funds for the purpose, and Houghton was appointed to undertake the work. According to the plan adopted Mr. Burt was to take charge of running the township lines of the Upper Peninsula, the subdivisions were to be made by deputy surveyors, and Houghton was to have the directorship of the entire work. The rocks were to be examined, and observations were to be made as to the general geologic and topographic features of the country. The system had been fairly organized and the field work of one season had been nearly completed when, on October 13, 1845, Houghton was drowned, during a snowstorm, while making his way in an open sailboat along the west shore of Lake Superior.

OWEN AGAIN SENT OUT

In 1847 D. D. Owen was again employed by the Treasury Department, under the immediate supervision of General Land Commissioner R. M. Young, to make surveys in the Chippewa district of Wisconsin and the northern part of Iowa.

In accordance with an act of Congress approved March 1, 1847, Dr. C. T. Jackson was appointed by R. J. Walker, then Secretary of the Treasury, to make a geologic survey of that portion of Michigan lying south of Lake Superior and north and northwest of Lake Michigan. As in previous operations of like nature by Owen, the object of this survey was to ascertain which of the lands should be classed as mining lands and which as agricultural. Jackson spent two seasons in this work and then resigned, for reasons which seem to have been in part personal and in part political. The completion of the work was confided to his assistants, J. W. Foster and J. D. Whitney. Jackson's report was published in 1849.

Reports or accounts of some other national surveys were made between 1804 and 1849, the year in which the Interior Department was created.

AN IMPORTANT ASSIGNMENT

An important survey made after the Interior Department was organized, was the "Exploration and survey to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean," made under the direction of the Secretary of War in 1853-1854. The report of this Survey comprises thirteen quarto volumes and contains information on the geo-

graphy, geology, and natural history of the region traversed.

The immediate precursors of the United States Geological Survey were the Hayden, King, Powell, and Wheeler surveys, whose reports are listed and indexed in Bulletin 222 of the United States Geological Survey. These surveys had no permanent offices and no assurance of existence beyond the single year for which they with difficulty managed to obtain appropriations.

COMMENDS WAY FOREST SERVICE IS CONDUCTED

Member of Forestry Relations Committee Speaks Highly of the Manner Work in West is Progressing

Unstinted praise for the Forest service of the Department of Agriculture is given in a recent communication from J. W. Deane, of the Forestry Relations Committee of The American Mining Congress. Mr. Deane's letter is as follows:

It is gratifying to those of us who believe in the right employment of the natural resources, their reasonable preservation, the elimination of ruthless waste, to note the increased and increasing satisfaction with the Forestry administration. Trails through the great mountain reaches, lookout stations and telephone communication, have conserved immensely from fire destruction of the timber stands. The very fact of known supervision, the placarded warnings and requests, have led to greater care by hunters and campers and have attached responsibility to the enjoyment of the splendid privileges whose exercise has not been abridged but has been enhanced by that supervision and that responsibility.

Also there has been through the feeling of greater safety a wider employment by families of the free privilege of use. These are factors in health and in happiness. The careful culling has made an appreciable revenue for good road purposes without impairment of this vast estate of all the people. Consciousness of ownership in and the right to use go to the making of better citizenship. The friction has disappeared. Insolence of irresponsible forest freebootery has about vanished, while bumptiousness of overzealous and incapable foresters has gone its way through the better standards of qualification the department requires.

Conditions because of their reasonableness are generally accepted. Calls for mediation and intervention are infrequent.

Incipient fires are quickly discovered or are reported seasonably. New growth has been promoted, danger from rubbish has been eliminated, and the people are coming into a just pride in their widest possession, their "boundless contiguity." The "lodge in some vast wilderness" is within the reach of the everyday man, thanks to the Department of the Interior and its distinguished Commissioner. Wider knowledge of that privilege must be promulgated. The employment betters citizenship. There is no patriotic stimulus like sense of ownership. The best-governed are they who participate in the governing.

Respect has taken the place of sneering. Realization of amplification of privilege instead of restriction is manifest.

What is true of the Mt. Sopris forest and its management is true in varying degrees of the other forests. Stubbornness as to grazing has gone with the disposition of the test case, and the defeated are glad of their defeat, because crowding has disappeared, monopoly by the strong has been overthrown. By the segregation of areas the sheep and cattle wars with their atrocities have come to an end.

As an asset the supervised forest is of greater worth than the neglected and the pillaged, just as cultivated land is worth more than wild land. The gradual release of the portions capable of tillage has been intelligently wiser than sweeping release could have been. Protest is hardly audible anywhere. The stupid appeal to prejudice, the allegation of discrimination in favor of the East as opposed to the rights of the West, is no longer effective. That sort of demagoguery has run its course in the main, though there are yet a few who try to employ it politically.

What service has more strongly impressed the greater worth of "liberty under law?"

Finishes Big Horn Basin Work

Charles T. Lupton, chief of the party of the Geological Survey assigned to the Big Horn Basin, has completed the year's work and, with Mrs. Lupton, is spending a month on a pleasure trip on the Pacific coast.

Mr. Lupton has completed the examination of a large area for oil and gas in the eastern Big Horn Basin. This includes a reconnaissance of the western side of the basin. He has brought up to date the information regarding the Grass Creek oil field, which is the most important newly discovered oil area in the Rocky Mountains.

BOY SCOUTS STUDY FIRST-AID FROM MINERS' CIRCULAR No. 8

The national organization of Boy Scouts finds that miners' circular No. 8, issued by the Bureau of Mines, which deals with first-aid, contains just the information it would impart to its members.

Acting in this connection the entire membership of the scout movement was requested by postal card to apply to the Bureau of Mines for this bulletin. As a result the Bureau of Mines is receiving thousands of requests for this publication from all parts of the country.

STORY OF LOST QUICKSILVER MINE IS NOT ACCEPTED

Geologist Knopf in Report on Nevada Cinnabar Explodes Interesting Tale—Tells of New Property

Adolph Knopf, of the U. S. Geological Survey, does not take much stock in the story of the lost Hawthorne quicksilver mine supposed to have been near Mina, Nev. He gives reasons in a recent report for his belief that the fruitless year-after-year search of Judge Hawthorne for the mine he had found but could not relocate after losing his bearings is a myth.

A portion of Mr. Knopf's report, which is now ready for distribution, reads as follows:

"A belt of cinnabar deposits is situated in the Pilot Mountains, in an air line eight miles south of east of Mina, Esmeralda County, Nev. The average elevation above sea level here is 7,300 feet, or about 2,700 feet above Mina, the local supply point, which is on the Southern Pacific system. The deposits are accessible from Mina by a good wagon road of easy grade about twelve miles long. The area in which the quicksilver deposits occur supports sufficient forest growth to furnish wood for local use as fuel and contains a number of springs that are capable of furnishing an ample domestic supply of water. The topographic features of the district and its approaches are shown on the scale of 1:250,000, or approximately four miles to the inch, on the United States Geological Survey's map of the Tonopah quadrangle.

"The discovery that drew attention to the cinnabar of Pilot Mountains was made in June, 1913. On the day of the discovery Thomas Pepper and Charles Keough had been tracking two stray steers, when near nightfall the trail led over an old prospect in which a face of limestone traversed by small veinlets of red mineral was exposed. The red mineral was recognized by Keough as cinnabar. After finding the steers and taking them to Mina, the two discoverers returned to Cinnabar Mountain, as the hill on which they had made the find has since been named, where they spent ten days in careful search and located seventeen claims. On June 18 they went back to Mina and made known their find, causing an intense excitement, and that afternoon almost every citizen of the town left for the site of the discovery by automobile and by other less expeditious conveyances. A large number of claims were staked by the first comers and many more were afterward staked by claimants from Tonopah. Unfortunately, the amount of exploratory and development work has not been proportional to this early enthusiasm.

"The discovery was widely heralded as the rediscovery of the 'lost Hawthorne quicksilver mine,' named for Judge Hawthorne, in whose honor it is said Hawthorne, the seat of Mineral County, is named. According to local report, Judge Hawthorne discovered in the seventies a rich quicksilver deposit, which is believed to have been situated at the site of the recent discoveries. In returning from the mountains, so it is said, Hawthorne lost his bearings, and, although he attempted annually to the end of his life to find the 'quicksilver mine,' he remained unsuccessful. This tradition seems highly improbable. The original discoverer—who he was is unknown—had done some very substantial exploratory work on the prospect. In his efforts to prove his find he had blasted out a considerable mass of solid limestone, and as further tokens of his activity sticks of powder, fuse, and picks lay abandoned at the prospect. That this energetic prospector lost his way and was unable to find the prospect at which he had labored is not easily credible. It is more likely that he abandoned the prospect as, in his judgment, not sufficiently valuable.

"The newcomers have found considerably richer deposits than the unknown pioneer did, and have shown that the cinnabar extends along a considerable belt.

GENERAL GEOLOGIC FEATURES

"Cinnabar has been found at a number of places along a belt that is about two miles long and trends northeastward. The main area comprises the hill known as Cinnabar Mountain. Limestones make up the bulk of this hill, although some dolomitic graywacke, composed of angular and rounded quartz grains and of angular chert particles embedded in a cement of dolomite, is interstratified with them. The strike ranges from north to northeast, and the dip from 40° to 70° NW. The limestones carry crinoid fragments and other obscure fossils, and are probably of Paleozoic age. North of Cinnabar Mountain graywacke, slate, and chert form the country rock. No igneous rocks, in either dikes or flows, have been found near the mineral deposits. Tertiary lavas appear on the north flank of the mountains, but they are four or five miles from the cinnabar belt.

"The cinnabar deposits on Cinnabar Mountain occur in fracture zones in limestone. The limestone is traversed by thin veinlets of white spar, and the cinnabar is intergrown with the calcite or dolomite of the veinlets or occurs as a replacement of the adjoining wall rock. The intimate penetration of the cinnabar into the body of the limestone is locally a notable feature. Stibnite is associated with the cinnabar at one locality only; pyrite and marcasite, characteristic associates of quicksilver ores the world over, do not occur in the district.

"The geologic features of the quicksilver deposits north of Cinnabar Mountain are somewhat different. At the Cinnabar King prospect the ore consists of cinnabar in a gangue of barite and the deposit is inclosed in a country rock of brecciated chert. Farther north, at the Red Devil prospect, the country rock is graywacke and the cinnabar is disseminated through a siliceous gangue.

"Although highly encouraging showings of cinnabar ore have been uncovered at a number of places in the district, the amount of prospecting so far done is insufficient to prove that the linear extent of any deposit, let alone its persistence in depth, is great enough to indicate its commercial importance. The geologic features of the deposits appear to be favorable to persistence of the ore in depth of the grade and character of that at the outcrop, for the mineralization is obviously of a kind in which the deposition of the cinnabar was not dependent on immediate proximity to the surface, as it is, for example, in quicksilver deposits that are formed at the vents of hot springs.

"The prospects at which the most exploratory work has been undertaken will now be described.

RELATION TO QUICKSILVER BELT

"The existence of a quicksilver-bearing belt in western Nevada, in Humboldt, Esmeralda, and Nye counties, has long been recognized. The information concerning the cinnabar deposits of this belt has recently been assembled by McCaskey, who contributes also a description of the ore bodies at Ione, in Nye County, the locality from which the principal production has so far been derived. The deposits east of Beatty described in the present report extend the quicksilver belt considerably farther south.

"The general tendency of those who have described the deposits of this belt has been to regard them as genetically connected with the Tertiary and Quaternary volcanism of the province. The phenomena observable at Steamboat Springs support this conjecture. The hot waters issuing from these springs deposit a siliceous sinter which contains cinnabar and amorphous red antimony sulphide, together with lesser quantities of other metallic sulphides. According to Becker, the deposits have formed close to the edge of a basalt flow and probably result from the volcanic action of which the lava eruption was one manifestation. He believes that the water issuing from the springs comes from the Sierra Nevada; that it descends to great depths, where it becomes heated by contact with subterranean masses of hot basalt, and ascends along the fissures by which the lava reached the surface. Concerning the genesis of the other quicksilver deposits of the western Nevada belt, opinions have been less precisely formulated, although, as already mentioned, these deposits also are regarded as of 'volcanic origin,' but probably this term is now used in a sense different from that which Becker had in mind.

"It is difficult, however, to show that some of the deposits are related to the Tertiary volcanism of the province. Ransome, in fact, is inclined to regard the quicksilver deposits of the Humbolt Range as of early Cretaceous age. The same difficulty inheres in any attempt to connect the cinnabar deposits east of Mina with Tertiary eruptive activity. On the other hand, it is interesting to note that a quicksilver deposit clearly of Tertiary age, occurs in the volcanic rocks at Goldfield, which is midway between Mina and Beatty. The deposits near Beatty are rather obviously associated with the Tertiary volcanism of that region. This association raises an important problem, for in the Bullfrog district, a few miles west of Beatty, the gold deposits, according to Ransome, are genetically connected with this same general outburst of volcanism, though it was not found possible to link the ore deposition with any particular one of the many magmas that solidified as the lavas now exposed in the district. Among the most noteworthy facts shown by the study of the district is the remarkably feeble chemical alteration of the wall rocks of the ore bodies; and it was therefore concluded that the vein-forming solutions were dilute, cool, and under no heavy pressure. Now the notable feature of the quicksilver deposits in the rhyolites east of Beatty is the intense alteration of the rocks—their complete silicification and alunitization in belts hundreds of yards long and as much as 200 feet wide. This profound alteration points to the conclusion that the quicksilver-bearing solutions were under physical and chemical conditions quite different from those that prevailed during the deposition of the auriferous ores. From these considerations and from others arising from a review of the literature of the subject it appears that the genetic relation of the cinnabar deposits to the many gold deposits scattered through the western Nevada quicksilver belt constitutes an interesting problem for future research."

Discuss Gasoline Vapor

The inflammability of mixtures of gasoline vapor and air is discussed by G. A. Burrell and H. T. Boyd in Technical Paper 115, just issued by the United States Bureau of Mines.

The authors in their conclusions say in part: "Two methods for determining the content of gasoline vapor in air are discussed. One has to do with the introduction of the mixture into an exhausted glass vessel, cooling it at the temperature of liquid air, removal of the air, and finally the measurement of the partial pressure of the gasoline vapor by means of a manometer attached to the liquefaction bulb.

"Another method consists in burning the gasoline vapor in oxygen and, from the contraction and carbon dioxide produced, calculating the percentage of gasoline vapor."

Kansas Has Satisfactory Year

Kansas reports some reduction in its coal production for 1914. On the whole, however, the year was a satisfactory one, for coal men, as no serious strikes or floods of pits took place during the year. The total production was 6,824,068 tons in 1914. There were 12,413 men employed in Kansas coal mines, during the year.

VIRGINIA COAL FIELD PROMISES TO BECOME HEAVY PRODUCER

Extensive Study of District Being Conducted By United States Geological Survey and State Authorities

Work is being pushed on a report being prepared by the Geological Survey on the Virginia coal fields. Four years of field work have been done in this region, in cooperation with T. K. Harnsberger, of the Virginia Geological Survey. Henry Hinds has charge of the Survey's portion of the work.

Owing to the increased importance of this field, due to the entrance of a railroad, it is desirable to get this information to the public at the earliest moment. Field work has not yet been completed. A more detailed survey is being made than ever has been undertaken previously in this part of the Appalachians.

The great coal field of southwest Virginia contains one of the largest untouched areas in the United States. As a rule the coal is high grade and cokes well.

A part of the field just has been opened by the extension of the Carolina, Clinchfield & Ohio Ry. An allied concern, the Clinchfield Coal Corporation, owns huge areas of coal lands which cover the greater part of three counties. Preparations have been made for working this coal field upon a large scale. It would have been under way before this time had it not been for the demoralizing effect of the war on the coal trade.

The new railway connects the coal field with the Chesapeake & Ohio at Elkhorn City. The field has an outlet to the Ohio Valley on the west and reaches tidewater at Charleston, S. C., where it is expected to become a factor in the trade moving through the Panama Canal.

It is predicted by the Government experts that this field eventually will become one of the big producers of the United States.

There are still two years of geological work to be done in this field.

MUTE MEMORIAL TO DR. HOLMES IN MISSING MINE CIRCULAR

Librarians through the country make frequent requests of the Bureau of Mines for miners' circular No. 1.

It seems not to be generally known that this number was left open for a bulletin to describe the work of the Bureau of Mines. The late Dr. Joseph A. Holmes, former director of the Bureau, intended to make this circular as strong and as comprehensive a piece of writing as was possible. On account of other more pressing matters, Dr. Holmes never was able to write the circular.

As a mute memorial to the late director, it is the intention of the Bureau never to publish miners' circular No. 1. The number is to be left open in memory of the man who gave his life to his work.

UNCLE SAM is conducting a multitude of activities which have a bearing on mining. Men engaged in this industry cannot afford to be out of touch with this work.

The Mining Congress Journal, the official organ of the American Mining Congress, is covering the Washington field carefully in its news columns. It offers a ready means of keeping you informed as to the efforts the Government is making in your behalf.

It is important not to forget that matters develop in the capital which menace your best interest. It is advantageous to know of these things in time to counteract them.

The Mining Congress Journal covers Congress, the Bureau of Mines, the Geological Survey, the Interstate Commerce Commission, the Supreme Court, the Land Office, the Patent Office, the Department of Labor and the other Federal offices where the work affects the mine owner or operator. State mining legislation and current decisions are featured. There are many other interesting features as to mines in the Journal.

Can you afford to be without this service?

PROGRESS IN CLASSIFICATION OF MINERAL WATERS IS MADE

Dr. Chase Palmer Departs from Used Channels of Reasoning and Economic Results are Obtained

Classification of mineral waters, which are merely solutions of mineral substances, has occupied the attention of chemists since the beginning of the last century.

They have never succeeded in classifying waters according to mineral contents, in such a way as to secure consistency of thought or expression. The reason for it is that as soon as a substance dissolves in water it undergoes some sort of chemical change. A natural water, which is a resultant solution of several compounds, is a very complex thing.

From 1887 to 1894, the American Association for the Advance of Science maintained committees instructed to obtain from every source, suggestions which would lead to classification of waters. Their attempts were futile. In 1894 the association discharged its last committee, and the subject never had been taken up again until Dr. Chase Palmer, of the United States Geological Survey, published a bulletin on the geochemical interpretation of water analyses.

BASED ON NEW IDEAS

This interpretation is based upon entirely new ideas. It is not based on the amount of the substance dissolved in a natural water, nor on the amounts of the constituents of substances which may, or may not, have been separated from one another when the substances themselves are dissolved in the water.

Every chemist knows that when a substance dissolves in water, it matters not whether it is changed from a solid to a liquid, or whether it undergoes any other physical change. Still the chemical capacity of every constituent of that substance to react with other substances remains unchanged, and must be considered if the chemical qualities of the solution, which is a mixture, is to be understood.

This capacity for reaction is called, technically, "Reaction Capacity" and it is upon reaction capacities that all the constituents of every substance are made the basis of the characterization, comparison and classification of all natural waters.

A SUM OF PROPERTIES

By this fundamental principle of chemical science applied to a water solution, a solution is considered directly a product of an aggregate of chemical properties.

It is known also that different waters contain different amounts of constituents—that is, difference in concentration.

To make it possible to compare waters of different concentration, according to their properties of reaction, it is necessary to reduce all the properties to a common basis.

This is done simply by using 100 as the basis for comparison.

Water is reduced to five classes. No water has more than three reaction properties. It can be ascertained readily if water comes from granite, limestone, volcanic or other kind of rocks. No difficulty is experienced in distinguishing between the water originating in the granite country of the Appalachians and that coming from the limestone regions of the Middle West.

HAS ECONOMIC APPLICATION

There are great possibilities for judging water with respect to its utility for economic use. It can be ascertained readily if water has been associated with petroleums.

Knowledge of the contents of water is very useful in the study of the result of changes which take place in mines which already have been worked, as well as the study of it as an agent producing deposits of valuable ores.

Knowledge of this kind enables a certain geologist in Oregon to tell of the presence of limestone hundreds of miles away, high in the mountains. By using this principle, he knew, despite the fact that he had not been there, that towering into the air above the western plateau was the same character of rock which is buried a thousand feet under the earth in Ohio. In either case they represent the remains of waters of some sea existing in early geologic times.

The capability of many applications of the principle set forth by Dr. Palmer is exciting considerable interest through the country. It already has been made the basis of several technical reports.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

Complying with the postal law of August 24, 1912, THE MINING CONGRESS JOURNAL submits the following information to its readers: THE JOURNAL is published monthly at 526 Munsey Building, Washington, D. C. Editor, J. F. Callbreath; Business Manager, J. F. Callbreath; Publisher, The American Mining Congress: Owners, The American Mining Congress—Carl Scholz, Chicago, Ill., president; Harry L. Day, Wallace, Idaho, first vice-president; M. S. Kemmerer, New York City, second vice-president; George H. Dern, Salt Lake City, Utah; third vice-president; J. L. Callbreath, secretary. There are no security holders. (Signed) J. F. Callbreath, Editor. Sworn to and subscribed before me this eleventh day of October, 1915, P. H. Hill, Notary Public.

BUREAU OF MINES RESCUE PRACTICES APPEAL WIDELY

Several railway companies and industrial concerns have been sending representatives to the Bureau of Mines rescue cars with the idea of learning more as to their rescue practices. Many features of mine-rescue work are equally applicable to other industries. Men in charge of the cars have been instructed not to limit their instruction to miners but to include any other industries, as the Bureau is anxious to extend this humanitarian work whenever possible.

ALASKAN WATERS TO BE CHARTED BY NEW GEODETIC SURVEY SHIP

The contract for the construction of a new United States Coast and Geodetic Survey vessel has been awarded by Secretary of Commerce Redfield to the Manitowoc Shipbuilding & Dry Dock Co., located on Lake Michigan, at Manitowoc, Wis. The contract price was $189,000 for the bare hull and machinery, but the ultimate cost of the vessel fully equipped will be $220,000.

The new vessel will be named the *Surveyor* and will be used in surveying and charting the dangerous waters of Alaska and the Bering Sea in the summer and the coasts of Washington, Oregon and California in the winter.

The *Surveyor* will be a steel steamer of about 1,000 tons displacement, with triple expansion engines and will use crude oil as fuel. She will accommodate sixty-six officers and men and carry enough fuel and stores to stay at sea on a surveying cruise for about three months at a time without returning to her base of supplies.

According to the terms of the contract, the *Surveyor* must be completed within one year, but Vice-President West, of the Manitowoc Company, who came to Washington to consult with E. Lester Jones, superintendent of the United States Coast and Geodetic Survey, about the construction of the vessel, says she will be finished in much less time, possibly as early as the first of next August, which will leave ample time to take the vessel to the Atlantic coast before the close of navigation in the Great Lakes.

A remarkable feature of the award of this contract lies in the fact that a shipbuilding company located on Lake Michigan should build on ocean-going vessel destined for service in Alaska. This brings home the important commercial fact that after all the Great Lakes extending far into the interior of the American continent are for all practical purposes a part of the Atlantic Ocean. It also speaks well for the enterprise of the shipbuilding company which is to build the vessel.

Secretary of Commerce Redfield is much pleased at the prospect of getting the new vessel ahead of time. He considers the charting of the waters of Alaska a vital part of the work of his department.

50,000 Electric Mine Lamps in Use

The Bureau of Mines' estimate places the number of portable electric mine lamps in service at 50,000.

President Gets Guide Books

Special bound volumes of the new guide books, being issued by the Geological Survey, are being sent to the President.

SAFETY FIRST IDEAS TO BE PROMOTED IN VERSE

Booklet of Rhymes to be Given to Every School Child in the United States

There is a boy in our town,
And he is very wise;
He always stops and listens,
And uses both his eyes.
He's never in a hurry
To get across the street,
He'll never get run over,
Because he is discreet.

This is one of the verses in a little book that the Safety First Federation of America Convention, which met in Detroit recently, will take measures to have placed in the hands of every school child in all of the country as the first step in a Safety First campaign for school children. Boards of Education will be asked to cooperate to the extent of having teachers read the warnings, verses, and stories and have the children memorize the rhymes of good advice, which go on to say about the careful "Safety First" boy:

He knows about the trolley cars
And how a boy can fall;
He knows about the fender,
Which may not work at all.
He knows about the autos,
When he is out at play,
And always takes precautions
Upon the great highway.
He knows about the dangers
That threaten everywhere,
And how it is important
That he should have a care.
He knows if he were injured
His mother's heart would break,
And so his rule is safety first!
For his dear mother's sake.

Ever since the inception of the Safety First Federation its officials have planned to have a danger educational campaign in the schools. For the last six months experts under the direction of Darwin P. Kingsley have been working out plans.

TWO VALUABLE TECHNICAL WORKS ADDED TO LIBRARY

Two rare sets of scientific literature just have been added to the library of the Geological Survey. They are the Journal of the Institute of Metals of London and the Transactions of the Sessions of Water Engineers of London. The former contains thirteen volumes and is one of the very few sets in the United States. The latter consists of nineteen volumes and probably is the only set in America. It is valuable particularly for those interested in water resources. It deals extensively with underground waters. Many features of important interest to miners and geologists are presented.

PORCUPINE DOME, IN MONTANA, FAVORABLE FOR OIL OCCURRENCE

Due to the interest that is being taken in oil exploration in Montana an examination of the Porcupine Dome, in Rosebud County, was made by C. F. Bowen, of the U. S. Geological Survey. In his report Mr. Bowen sets forth this conclusion:

"The presence or absence of oil or gas in the Porcupine Dome field can be demonstrated only by thorough and systematic exploration with the drill. The only positive statement that can now be made regarding their possible occurrence is that the structural and stratigraphic conditions are favorable for their accumulation. The most promising place, in the opinion of the writer, for testing the field is near the crest of the uplift; that is, on the divide between Porcupine and Little Porcupine Creeks, probably in Tps. 10 and 11 N., R. 38 E., because the underlying sandstones come nearest to the surface there and because the water encountered in the sandstone 3,200 feet below the mouth of the Vananda well is believed to saturate that stratum, and would therefore force the oil and gas, if present, to the crest of the anticline. The mouth of the Vananda well has an altitude of 2,704 feet above sea level. As the water encountered in the sandstone at the 3,200-foot level rose within 50 feet of the surface, the water level in this sandstone is about 2,650 feet above the sea, and hence if oil occurs in the sandstone it would be expected to occur at or below that level. Nothing is known of the attitude of the rocks so far below the surface, but if they are approximately parallel to those at the surface, it is probable that the water-bearing sandstone does not reach an altitude of much more than 2,650 feet in any part of the dome; therefore it is a fair inference that the water-bearing sandstone is completely saturated with water, and if it contains oil or gas they will be found at the crest of the sandstone and near its upper surface. For this reason it is advisable to drill near the axis of the dome, which, as suggested above, is probably in Tps. 10 and 11 N., R. 38 E. It cannot be emphasized too strongly that the existence of oil or gas in this field is at present merely conjectured from the favorable structure and the fact that formations of the same age and character as those represented here are known to contain oil in other places. Under these circumstances nothing but systematic and intelligent exploration should be undertaken and all haphazard ventures should be discouraged, at least until some conclusive results have been obtained."

Other Lamps to be Approved

Investigation of the portable electric miner's lamp is continued at the Bureau of Mines and at least two other makes of lamps are practically ready for approval.

OZOKERITE NOT NECESSARILY PETROLEUM INDICATION

There seems to be a common impression that the presence of ozokerite on the surface indicates the presence of petroleum beneath. That this cannot be taken as a positive indication is indicated by the following statements upon the subject by O. B. Hopkins, of the Geological Survey:

"The presence of ozokerite at the surface may be considered as an indication of the presence in the underlying rocks of hydrocarbons, of which petroleum is one of the common types. Seepages of the heavy residue from petroleum may occur along the outcrop of the porous beds which contain it, or along fault lines which make possible its upward circulation from beds far below the surface. In either case, the presence of heavy hydrocarbons at the surface cannot be considered as the proof of the presence of petroleum in commercial quantities in underlying rocks at that immediate locality. The collection of petroleum in commercial quantities depends on a number of factors, of which geologic structure is an important one.

"It is impossible to state at what depth oil may be found in the eastern part of North Carolina. Oil usually occurs in certain recognizable horizons in the various fields, and from a study of the geology of the neighboring territory it is often possible to forecast the depth to the supposed oil-bearing beds. In North Carolina, however, there are no known oil-bearing horizons, and thus their presence has to be demonstrated before it is possible to forecast the depth at which they may be found."

To Work Arizona Asbestos

Owing to the increasing price of asbestos, active operation of a property near Globe, Ariz., will be begun by H. P. Wightman and Earle Pierce.

Samples of asbestos from this deposit sent to Government and other experts for examination have been pronounced of exceptionally fine grade.

The development of asbestos deposits will play an important part in Arizona's future, some engineers predict.

Report on New Jersey Geology

The geology of New Jersey is the subject of a painstaking report just issued by the Gelogical Survey of New Jersey. It is the work of the State Geologist, Henry B. Kummel, and J. Volney Lewis. The work is quite technical but fills a long felt want for greater detail of New Jersey formations.

SCIENTISTS COOPERATE TO STOP THEFTS OF PLATINUM

Various thefts of platinum have been reported recently from laboratories in different parts of the country.

With the increasing price of platinum it is considerably more valuable than gold, and apparently a means of disposing of the metal has been found.

Scientific men are taking steps to make such thefts unprofitable. In one case a laboratory assistant who was found guilt of stealing platinum practically has been excluded from all laboratories of the country, due to the very effective advices which were sent broadcast as to the man's proclivities.

Platinum is so necessary to laboratory work that a considerable supply of it must be carried in stock. It must be in almost daily use. In many cases laboratories have had a decided struggle to secure the means to buy the necessary platinum, and it seems most unfortunate that such institutions have been preyed upon by those of burglarious tendencies.

VALDEZ REGION SOON TO BE PRODUCER OF COPPER

The U. S. Geological Survey recently has issued a bulletin on the gold and copper deposits of Port Valdez, Alaska. The report describes the distribution, geologic relations, and characteristics of the mineral deposits of this district. The mineral resources of this district comprise deposits of gold, silver and copper. Gold and silver have been the only metals recovered from the ore in this district, but recent developments indicate that the Midas mine on Solomon Gulch will soon become a copper producer. Last year nine mills were operated in the Port Valdez district, and it is estimated that between 250 and 300 men were engaged in mining at one time or another during the year.

PRESIDENT CREATES DINOSAUR MONUMENT IN UTAH

President Wilson, upon recommendation of Secretary Lane, has issued a proclamation creating the Dinosaur National Monument in Utah. Within the monument are reefs of Juratrias rocks bearing Dinosaurian and other gigantic reptilian fossils, declared by scientists to be among the most interesting and valuable in the world. These fossil remains exemplify some of the extraordinary forms of early reptilian life on the globe. It was felt by Secretary Lane that the wonderful formations should not be lost to science by haphazard and unauthorized excavations of vandals or mere speculators, but should be protected until this Government has in its own great National Museum a full representation of the principal and most extraordinary types.

PRINCE WILLIAM SOUND HAS 8 COPPER AND 2 GOLD MINES

The lode-mining districts of Prince William Sound may in a general way be grouped into two concentric belts, concave southward, the outer one including the gold quartz districts and the inner one including the copper camps. The copper mines produce also large amounts of gold or silver, or both; and the gold mines produce also some silver. The ores of the gold quartz districts are free milling. The copper ores are smelted at Tacoma, Wash., and their content of valuable metals is recovered during this process. The metallurgic treatment of the gold quartz ores is performed locally in small stamp or roller mills, with amalgamation; the concentrates are shipped to the Tacoma smelter. A much larger tonnage of copper ore than of gold quartz ore is mined and treated, and the total value of the metals produced from the copper ores is about five times that obtained from the gold quartz ores. The only placer deposits in the region are gold placers, and these are found only in the gold quartz districts and have been little developed.

The productive mines of the Prince William Sound region in 1914 included two copper mines and eight gold mines. Most of the gold mines were in the Port Valdez district. Besides these properties, a prospect on Knight Island made a small shipment of copper ore to Tacoma, and the Golden Eagle stamp mill, at Golden, is said to have been in operation a few days in the fall. This information is from B. L. Johnson's recent report to the Geological Survey. Mr. Johnson has made a careful inspection of this district.

NORTH DAKOTA LAND IS TO BE OPENED TO HOMESTEAD ENTRY

Upon the recommendation of Secretary of the Interior Lane, the President has signed a proclamation opening to homestead entry over 100,000 acres of land in North Dakota. These lands were formerly within the Fort Berthold Indian Reservation, and have been reserved from disposition because of their containing coal. The lands will be classified without regard to their coal value, as agricultural land of first and second class, grazing land and timber land, and appraised accordingly. The appraised price must be paid in addition to meeting the requirements of the homestead law. The coal in these lands will be reserved to the Government and the homestead entryman will receive patent for the surface only unless it be shown that the land does not contain coal. The coal deposits are subject to disposition under the coal-land laws in effect at the time of such disposition.

By the terms of the proclamation these lands will not become subject to homestead entry until late in the spring of 1916.

PERSONALS

John C. Hoyt, hydraulic engineer, in charge Division of Surface Waters, United States Geological Survey, has returned to Washington after a two months' inspection trip in Montana, Idaho, Washington, Oregon, and southeastern Alaska.

D. C. Winchester has returned from an extended field trip in the oil shale region of the West.

J. P. Dunlop, of the United States Geological Survey, has left for a trip through Missouri, Arkansas, Oklahoma, and Kansas to collect data on lead and zinc. He will inspect particularly the new mills, new mines and new plants in general. Before returning to Washington he will visit the zinc district of Wisconsin. This work will require the remainder of the year.

W. C. Phalen, of the United States Geological Survey, made a trip to New York last month to secure information for the next mineral resources report.

R. B. Marshall, chief geographer of the U. S. Geological Survey, will return to Washington November 15, after several months in the field.

E. W. Parker, head of the Information Bureau of the Anthracite Coal Companies, was in Washington October 6, en route to Philadelphia to attend the meeting of the Board of Directors of the coal companies.

William M. Welch has received a permanent appointment as gas engineer for the Bureau of Mines and has been assigned to field work.

Willard C. Cope has been promoted to the position of chief of the explosives chemical laboratory of the Bureau of Mines.

Ernest L. Tarof has been appointed a junior explosives engineer in the Bureau of Mines.

Guy B. Taylor has been named assistant explosives chemist at the Bureau of Mines, Pittsburgh station.

E. R. Lloyd, vice-chairman of the Coal Board of the Geological Survey, was called to West Virginia early in October by the death of his father.

D. A. Lyon, of the Salt Lake office of the Bureau of Mines, is making splendid progress in his investigations of the chloridizing, roasting and leaching process for the recovery of lead from low-grade ores.

D. D. Condit, of the Geological Survey, is spending a few weeks in Ohio bringing up odds and ends in recent mapping in that State.

H. S. Stabler was acting chief of the Land Classification Board last month in the absence of W. C. Mendenhall.

C. J. Hares, who has been engaged in oil investigation in Wyoming, will make coal examinations in Montana before returning to Washington.

W. B. Emery, of the Geological Survey, has returned from field work in Wyoming, where he has been engaged on oil classification work in the Big Horn Basin.

J. W. Swift, of the account section of the Bureau of Mines, is introducing an auditing system in the western offices of the Bureau.

R. A. Dye, recently named clerk to the mine inspector of Alaska, has left for Juneau to take up the duties of this position, which was provided for by the last Congress.

Sydney Paige, of the United States Geological Survey, is still working in the Tyrone district of New Mexico.

J. F. Hunter, of the United States Geological Survey, has joined Adolph Knopf in his study of the mother lode of California.

Where Assays Are Made

The Geological Survey is being called upon continually to make assays. Commercial assays are not made by the Survey.

If an assay is desired the proper course is either to employ a private assayer or chemist, addresses of many of whom may be found in the technical journals, or to send the specimen to one of the Government assay offices, which are located at Philadelphia, New Orleans, Carson City, Nev.; Seattle, Wash.; Boise, Idaho; Helena, Mont., Deadwood, S. Dak.; Salt Lake City, Utah; Charlotte, S. C., where a regular charge is made for such work.

CHIEF GEOLOGIST WHITE INSPECTS FIELD WORK

David White, chief geologist of the U. S. Geological Survey, has returned from a trip during which he visited all of the field parties engaged in fuel investigation in Illinois, western Kentucky, Oklahoma, Nevada, California, Texas, southwestern Virginia and Pennsylvania.

Mr. White also participated in a conference with H. S. Gale and others with reference to the progress of boring and other investigations in search of potash.

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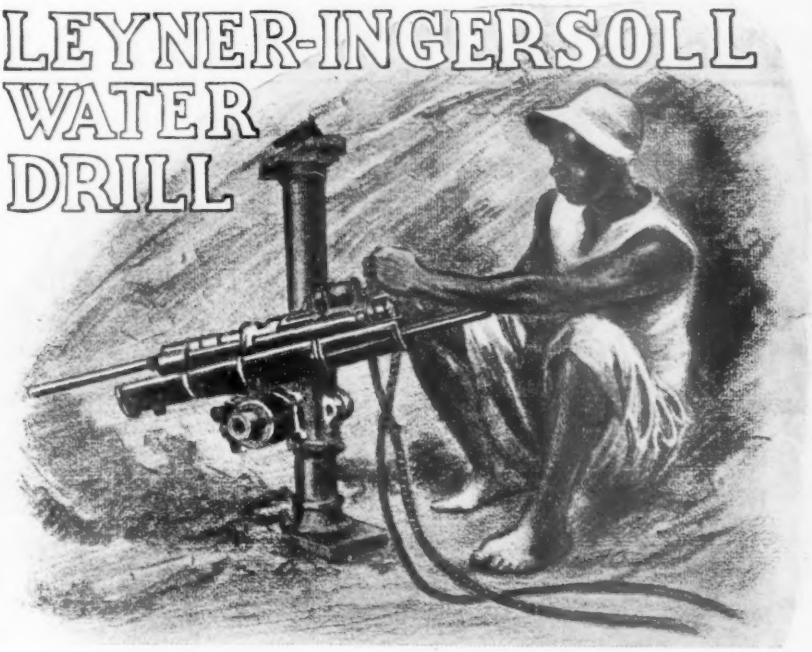

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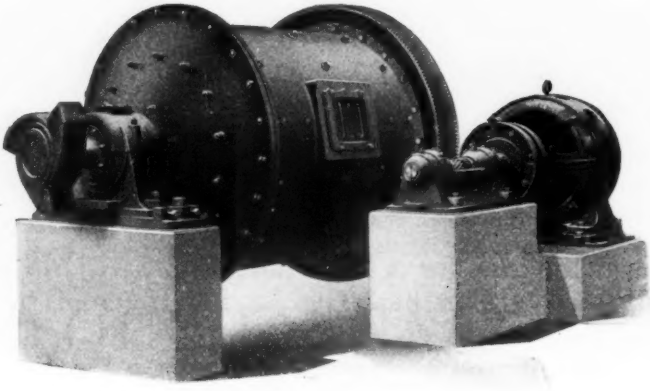

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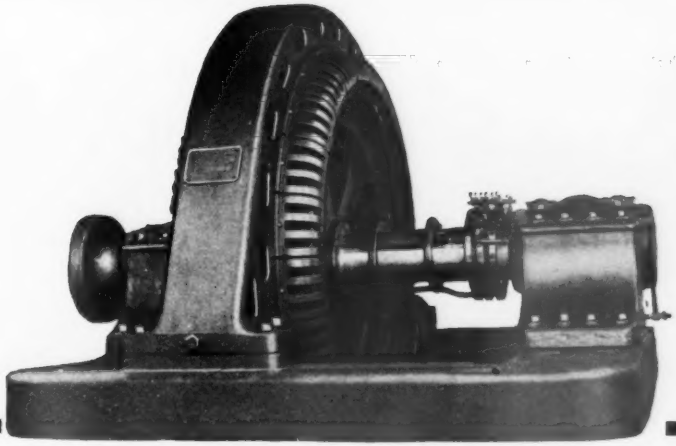

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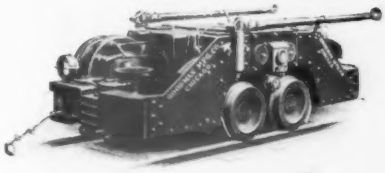

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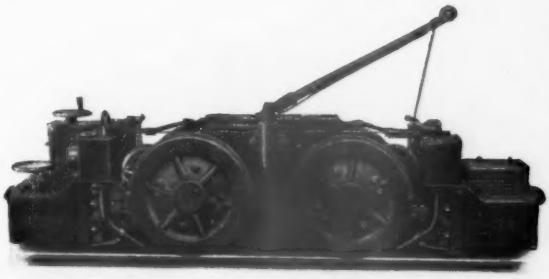

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